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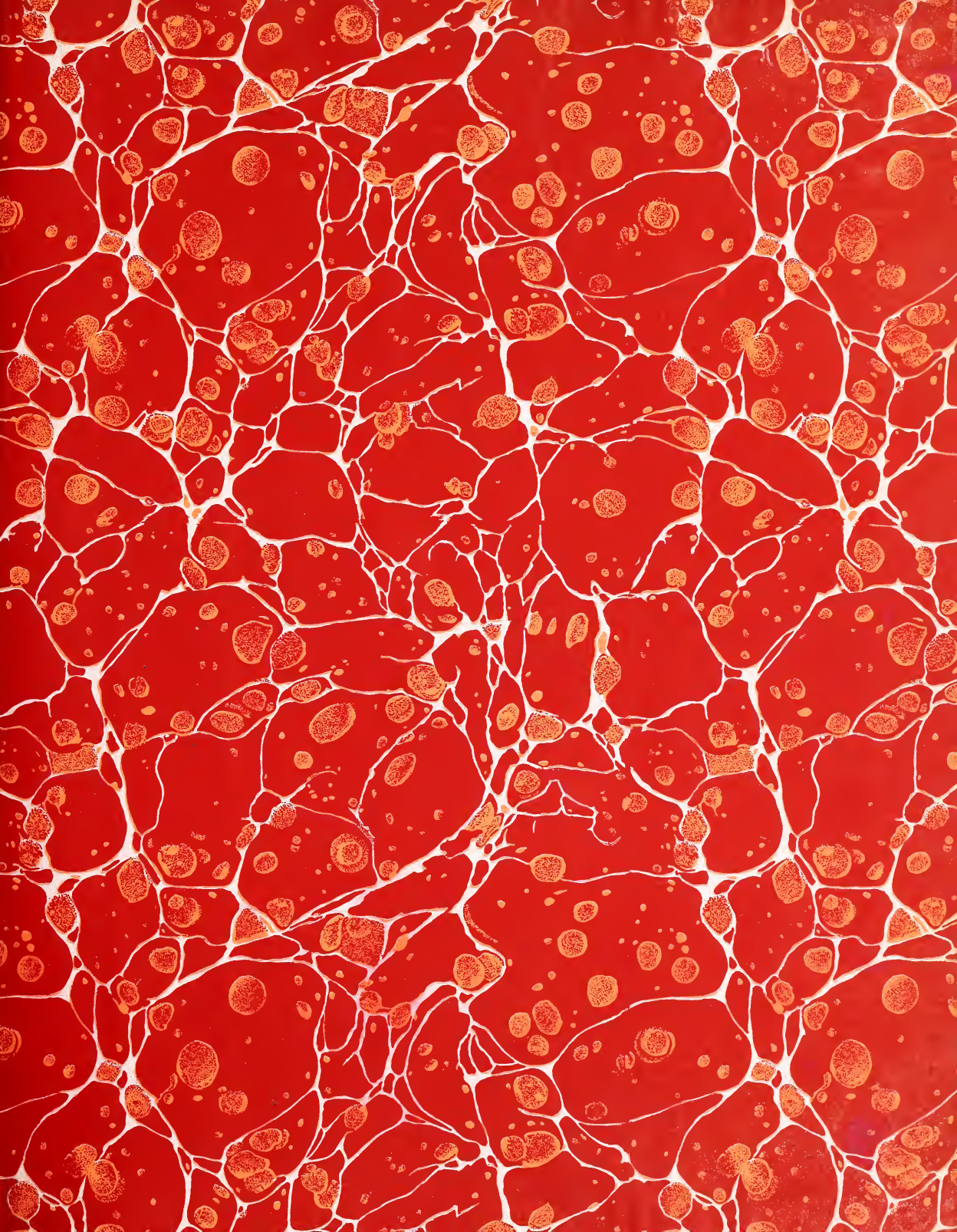

Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

VOL. II WASHINGTON, D. C., AUGUST 12, 1914 No. 1

A HOMEMADE FLYTRAP FOR 20 CENTS.

SOUTH CAROLINIAN INTERESTS HOUSEWIVES IN FLY EXTERMINATION BY A SIMPLE, EFFECTIVE DEVICE FOR CATCHING FLIES.

A homemade flytrap, marked "fragile," with stamps and address attached to one end, has reached the United States Department of Agriculture by parcel

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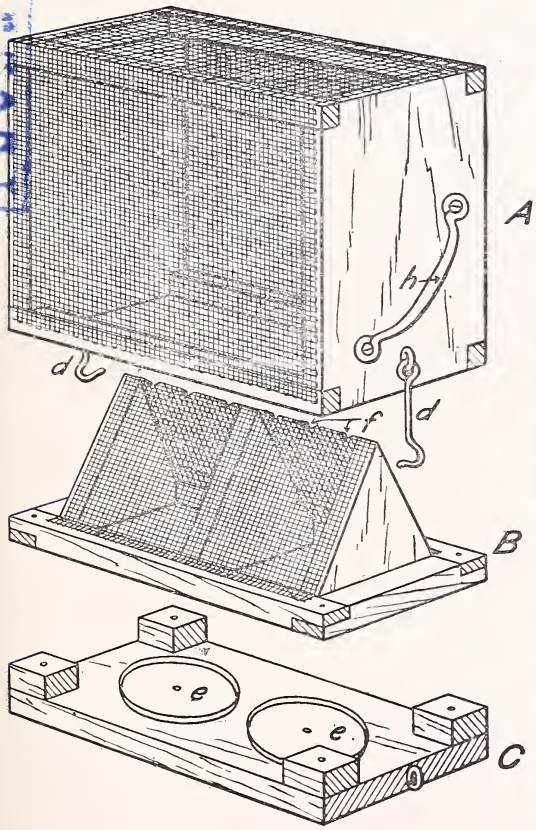
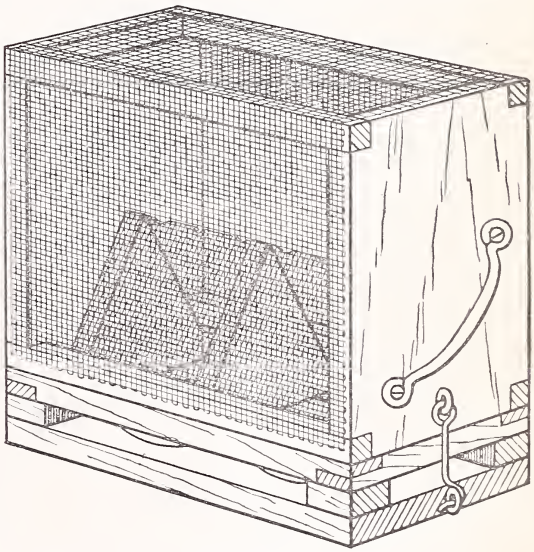


Three sections of homemade fly-trap.

post from South Carolina. A letter arriving at the same time from one of the department's farm demonstration agents explains how similar traps are being made in that section at a cost of from 10 to 20 cents, and have proved a most successful aid in the work of home sanitation throughout that section. The trap has been baited and tried out with success in the department.

DESCRIPTION OF TRAP.

"These traps can be made any size to suit," says the department's agent, "but the most popular size in my work is 16 inches long, 12 inches high, and 8 inches wide. I also make some as large as 24 inches long, 18 inches high, and 12 inches wide. The material for these traps cost from 10 to 20 cents, and can be put together by anyone handy with tools in a short while." The trap may be baited with sour milk, a piece of banana, a fruit skin, or similar substance. This should be removed at night or it will attract ants. At the same time, the flies which have been caught should be



Trap ready for use.

killed by pouring hot water over the trap or leaving it immersed in water until the flies are dead.

The flytrap is made in three distinct parts (A, B, and C) that may be detached from one another by unfastening the hooks (d) that hold them together at either end. The trap is unhooked in order to place the bait on the bottom section (c). The bait is placed on two pieces of tin (e) tacked to this bottom section. In the sample trap that was forwarded to the department these pieces of tin were circular tops of paint or milk cans, which can be removed by prying up with a knife.

The middle section (B) of the trap consists of a screen-covered frame that resembles a small gable

roof through which there are six holes (f) to let the flies into the uppermost section (A), which is merely the screened-in cage that is set down over the other two parts (B and C).

The handle (h), of course, is unnecessary, but will be found convenient when the trap is immersed in water to kill the flies.

The department's agents in their demonstration visits to the different farms take the flytraps with them. They interest the housewife in them, and set one up in her home to show what it can accomplish. The results of the demonstrations have been so successful that almost every farmer who sees the trap wants one, and many of them have been putting traps together in accordance with the instructions of the agent.

The traps have done much to arouse the interest of the rural population of South Carolina in fly extermination, the necessity for which is not always felt as strongly on the farm as it is in the crowded city, where these vermin make themselves more obnoxious.

TO CROP REPORTERS.

The Bureau of Crop Estimates has received the following inquiry from one of its crop reporters; as a similar question has probably arisen in the minds of many reporters, the reply is published for the benefit of others:

"We have had only one good rain in two months and the hay is short and thin; I placed an estimate of 40 per cent of a full crop. However, a timely rain would increase the yield, as there is a lot of small, immature stocks that could grow yet; a good rain to-night or to-morrow might increase the yield to 60 per cent of a full crop. The question is: Should I increase my estimate on the possibility of the rain, or should I report it as I think it would be if our present weather conditions continue?"

The following answer was given by the chief of the bureau:

"It is my opinion that under such conditions I would report a figure somewhat above 40 but also below 60, being influenced as to the exact figure by the reasonable probability that there will be rain in the near future. If I estimated that the probability is about equal that it will or will not rain, the condition should be reported as 50. If there is greater probability that it will rain than that it will not rain, I would put the figure somewhere between 50 and 60, but if there is greater probability that it will not rain, I would put the figure somewhere between 40 and 50, the precise figure depending upon my estimate of the degree of probability one way or another of the coming of rain. Any condition figure given should reflect one's best judgment of the probable outcome of the crop, assuming normal conditions to prevail from the time of the report to the close of the season."

POISON IVY.

Experiments in destroying poison ivy by means of chemicals have developed only a limited field of usefulness for this method. Applications of strong solutions of crude sulphuric acid or of crude carbolic acid have been found effective, but serious risks are encountered in handling these substances. In work undertaken by the Massachusetts Experiment Station it was found that arsenate of soda could be used very successfully to kill poison ivy on large trees over 6 to 10 inches in diameter and on stone walls, buildings, etc. In open fields, however, this treatment proved expensive and injurious to other vegetation, rendering the land useless for several years. In these experiments two or three applications of arsenate of soda at the rate of 2 pounds to 10 gallons of water were generally sufficient. The preparation is poisonous and stock must be kept away from the poisoned plants. The cheapest and most effective method of eliminating poison ivy seems to be the simple one of rooting up the plants and destroying them. In large fields it may be necessary to plow and cultivate the land.

The safest time for handling poison ivy is in the fall, after the sap is out of the plants and after the plant has stopped flowering, as the sap and pollen make the plant more likely to affect those who come in contact with it. In any case, however, the following protective measures should be used by those attempting to eradicate it: With the exercise of due care, the use of overalls and gauntleted gloves will enable most individuals to deal with the plants with impunity. The further precaution of greasing the hands with lard, to be washed off with strongly alkaline soap on conclusion of the work, has been recommended. It may be possible to employ some one to remove the plant who is not affected by it, since many individuals are practically immune from the effects of poison ivy. In burning poison ivy care must be taken to keep away from the smoke, as cases of serious injury to eyes, nose, and throat from the poison conveyed by this means have been reported.

The toxic properties of poison ivy are attributed to a nonvolatile oil which is found in all parts of the plant even after long drying. Minute amounts of this oil are capable of causing extensive inflammation. The oil is insoluble in water but may be removed by alcohol or destroyed by a solution of sugar of lead and alcohol. As a preventive measure thorough and repeated washing with warm water and strongly alkaline soap as soon as possible after contact with poison ivy is advisable, and it should be borne in mind that the poison may be transferred indirectly from clothing, gloves, and implements, also from towels used by those who have been in contact with the plant.

Since ivy poisoning generally subsides within a few days, the treatment of mild cases is simple. There is,

however, no one remedy that will cure all cases. In severe cases a physician should be consulted. Specialists of the department have found the following methods and formulas useful in many cases: At the outset, removal of the cause of the irritation may be accomplished by cleansing the inflamed surface repeatedly with alcohol, or with a saturated solution of sugar of lead in alcohol, using a fresh bit of lint or absorbent cotton each time, to avoid spreading the irritant. The sugar of lead solution can not be used over extensive areas because of risk of lead poisoning. Covering the inflamed parts with lint or absorbent cotton kept constantly moist with limewater or with a saturated solution of bicarbonate of soda, will afford relief. When this can not be used, a simple ointment, such as zinc oxide ointment, is recommended. A solution containing 1 ounce of fluid extract of grindelia to 1 pint of water applied on cloths and allowed to evaporate may afford relief. Black wash, prepared by adding 1 dram of calomel to 1 pint of limewater, may be applied two or three times a day, allowed to dry, and followed by zinc-oxide ointment. This treatment must be used with caution in extensive cases because of the possibility of mercury poisoning. The acute inflammation of ivy poisoning is sometimes followed by eczema and secondary infections of the skin, which in mild cases will yield readily to treatment with bland antiseptic ointments. A formula highly recommended for ivy poisoning and often especially helpful at this stage is the following:

POISON.

(For external use only.)

Carbolic acid	2 grams.
Resorcin	2 grams.
Bismuth subgallate	4 grams.
Equal parts water and limewater to make	250 c. c.

This solution may be dabbed on the affected parts several times a day.

THE FARM SCORE CARD.

The farmers in certain counties in the Middle Western States have proposed a farm management contest and prizes to be awarded by a committee of representative farmers who will visit the farms of the various contestants and score them by means of a score card intended to bring out the principal features of their management. The Office of Farm Management, in the Bureau of Plant Industry of this department, has been called upon to furnish a suitable score card for this work. The card printed below is proposed for this purpose.

The aim of this score card is to bring out the most important farm management features on a farm. A study of the points to be scored will, it is believed, encourage farmers to study their business from a somewhat different point of view from customary discussions of farming. It is believed that a committee of intelligent farmers can use this score card effectively and that contests based upon the subject matter outlined in the score card will be highly instructive concerning the business features of farming.

The various points to be scored are not given any particular weight. In using the score card the judging committee is to use its judgment concerning the amount to be scored off for deficiencies in all of the points to be scored. Any deduction up to a hundred points may be made in scoring any one of the 10 features of the farm. It is possible, with this score card, for the final score of the farm to be a negative quantity. This would simply mean that the farm is utterly undesirable for more than one reason.

Farm score card from standpoint of farm management.

Location.....
Name of operator.....Owner or tenant.....
Type of farming.....
Area of farm.....acres. Tillable land.....acres.
Names of Judges.....
.....
.....
Date.....

Points to be judged.	Deductions for deficiencies.
1. Size of farm.....	_____
Is the farm large enough to admit of a fair profit, considering the type of farming followed?	
2. Location.....	_____
Is the farm well located with reference to roads, market point, school, church, and social center?	
3. Type of farming.....	_____
Are the crops grown and the stock kept of the best kinds, considering soil, climate, size of farm, location, and market and labor conditions?	
4. Organization.....	_____
Is the right proportion of land devoted to each crop? To pasture? Is too little or too much productive livestock kept? Is the farm work well distributed throughout the season? What provision is there for winter work for the hands?	
5. Soil management.....	_____
Are crops rotated to best advantage? Are legumes grown as extensively as they should be? Is the manure properly handled and properly used? Are waste materials such as straw, corn stalks, etc., returned to the land? If manure is insufficient, is proper provision made for supplying humus by green manure crops, stubble, sod, etc., to plow under? Are the right kinds and amounts of fertilizers used? Are actual crop yields satisfactory?	
6. Quality of the business.....	_____
If dairy cows are kept, are they good producers? Are the other farm animals of such quality as to bring top prices in the market? How about the quality of wool, butter, etc., produced on the farm? Quality of grain: Is it free from weed seeds and trash? Is the hay clean and bright? Are the farm products properly housed and cared for? Quality of work stock.	
7. Economy and adequacy in equipment.....	_____
Are the following items of equipment adequate for the needs of the farm?	
a. The farmer's dwelling.	
b. Houses for laborers.	
c. Barns and storehouses.	
d. Fences.	
e. Drainage system.	
f. Water supply for live stock.	
g. Implements and machinery.	
Are any of the above items more elaborate and expensive than conditions justify?	
Are more or fewer work animals kept than should be?	

Points to be judged.	Deductions for deficiencies.
8. The farmstead	
Considering the size of the farm, the topography, and the location of nearby country roads, is the farmstead properly located on the farm? Are the various buildings conveniently located with reference to each other? Is the right amount of land devoted to yards, lots, etc.?	
9. The farm home	
Are the women who do the work in and about the farm home provided with proper equipment and conveniences for their work? Have they labor-saving devices? Is the arrangement for storage of food supplies, fuel, water, etc., adequate? Is the garden well located? Are the poultry houses handy and well located?	
10. General conditions	
Are the buildings, fences, roadways, and drainage system kept in proper repair? Are the fence rows kept clean? Does the farm produce its own supplies to the extent it should? Are the garden and orchard adequate for the needs of the people living on the farm?	
Total deductions	
Final score (100 — total deductions)	

THE FULL USE OF FARM HORSES.

One of the principles of farm management is to "take time by the forelock," or, in other words, to keep up with the necessary work as closely as possible so that one may be better prepared for contingencies. A good illustration of the need for this is found in some data which the writer has gathered from a group of 28 farms at Conway, Ark. These farms have a little more than 1,600 acres in crops and have 84 work animals. It happened that the month of January, 1914, was warm and fairly dry. The mean temperature at Conway for the month was 45.4°, and according to an average of 24 records kept by farmers there were only six work days during the month when the ground was not fit to plow; hence, there were necessarily 21 days when it was fit to plow, there being only four Sundays in that month. Under these conditions the farmer who is always up with his work did much plowing, but many others did little or none. The amount of horse work on these 28 farms is expressed in the following table:

	Hours.
Crop work	4,462
Miscellaneous work	3,488
Total work	7,950
Crop work per horse	53
Miscellaneous per horse	41.5
Total work per horse	94.5

If we assume only 8 hours' work per day there would have been 168 hours per horse available for crop during the month; hence the actual crop work performed was less than one-third of that which could easily have been performed. Indeed, this statement is hardly strong enough, as several of these farmers hauled manure from town on rainy days, as well as dry days, and this work was classed as crop work, since the manure was to be applied to the crops.

In the month of April there was much wet weather, and according to records from the same farms only one-half of the week days were available for crop work; hence those who had done no plowing in January were not only delayed in getting in their crops, but some of them were not able to plant as many acres as they intended. One farmer in particular spent January in hauling wood, receiving $1.25 gross for a "jag" of wood that took one day of his time and half a day for the time of the team, and by reason of this he turned not a single furrow in January and was fearfully delayed in April.

VALUE OF CONSECUTIVE CROP RECORDS.

Cost of crop production records to be of the greatest value should cover a consecutive term of years. Only by this means can an average cost of production be determined. Very few crops are either highly profitable or ruinously unprofitable every year. Most crops have their good and their bad years from the standpoint of profits, and only by records extending over a term of years can the relative profits or losses of the fat and lean years be compared and the normal or average cost of production and profit determined. To illustrate this, figures obtained by complete cost records for five years on a general farm in western New York are shown in the table below. This farm practices a three-year rotation of beans, wheat, and clover, which is a customary rotation in this locality. The figures show that none of these crops made a profit or caused a loss every year of the five over which the records extended. It will be easily seen that no single year's records would have given a safe index of the relative cost and profit of all these crops and of the rotation.

Profit or loss per acre.

Year.	Beans.		Wheat.		Clover.		Rotation.	
	Profit.	Loss.	Profit.	Loss.	Profit.	Loss.	Profit.	Loss.
1909	$10.30	.....	$8.73	.....	.....	$1.71	$5.77	.....
1910	13.85	.....	4.40	.....	$1.75	.....	6.77	.....
1911	.....	$13.29	.....	$5.08	2.73	.....	.....	$5.21
1912	3.98	.....	.....	10.38	13.40	.....	2.33	.....
1913	.....	6.85	12.73	.....	.63	.....	1.97	.....
Average	1.60	.....	2.08	.....	3.24	.....	2.30	.....

The profits shown are strictly net, all interest, taxes, and general expense of every nature having been apportioned to the productive farm enterprises including these crops.

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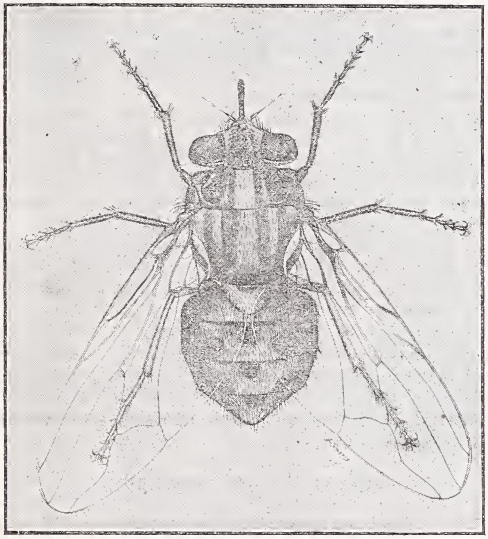
UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

VOL. II WASHINGTON, D. C., AUGUST 19, 1914 No. 2

TO PREVENT OUTBREAK OF STABLE FLY.

The stockmen of north Texas, Oklahoma, and the grain belt to the north are now confronted with conditions which may bring about a serious outbreak of the stable fly similar to that experienced in north Texas and other parts of the grain belt in 1912. The so-called stable fly is the insect which closely resembles the horse fly, but is capable of causing much annoyance to live stock by its painful bite, which is inflicted with a sharp proboscis or beak. It is sometimes spoken of as the "biting house fly," "wild fly," or "straw fly." When it is not biting the point of this beak may be seen projecting slightly in front of the head. The body of the insect is also slightly more robust than that of the house fly, and the abdomen rather more distinctly marked with dark patches.



Adult female stable fly. (Greatly enlarged.)

The unusually large grain crop of this year will give rise to a very large number of straw stacks. A considerable number of flies are now present, and with a period of rainy weather we may expect a horde of them three weeks later. It has been shown by investigations conducted by the Bureau of Entomology that these flies breed extensively in fermenting straw. Oat straw and rice straw are preferred by the fly for its breeding, although in the absence of these the straw of wheat, rye, or barley, if in the proper state of fermentation, will produce large numbers of them.

Manure acts as a breeding medium throughout the year; this is especially true of horse manure. The favorableness of this substance for breeding is increased when straw used as bedding is intermixed. Although manure produces a sufficient number of stable flies to prove very annoying to stock, it appears that very severe and widespread outbreaks are largely attributable to the breeding of the pest in straw stacks. The destruction of the stable fly in the first instance may be brought about by the scattering of the manure upon fields, thus causing the drying out of breeding material, and the consequent destruction of the larvæ. Where it is not practicable to scatter the manure on fields the same results may be accomplished by treating it with borax at the rate of 0.62 pound to 8 bushels of manure. The powdered borax should be scattered over the entire surface of the manure pile. As fresh manure is added it should be treated with borax at intervals of five days to insure the destruction of the house fly as well as the stable fly. Borax has an injurious effect upon crops when used in excessive amounts. It is therefore necessary where the manure is to be applied to soil for cropping that quantities not greatly in excess of the above amount be used on the manure.

In the grain-growing section the care of the straw after threshing is by far the most important step in the control of this pest. It has been determined that fermenting oat straw is far more favorable as a breeding medium for the stable fly than is wheat straw or other vegetable matter. Where rice is grown hordes of flies are often bred out in the fermenting straw and chaff from this crop. Oat straw is also much more highly prized for feeding live stock than is wheat straw. The shortage of foodstuffs over much of the grain belt for the last few years has caused the farmers to depend largely upon straw to supplement other food in carrying their stock through the winter. The value attached to oat straw for feed and the fact that this material furnished the most favorable place for the breeding of the stable fly emphasizes the need of taking better care of it.

It is advised that as far as possible all oat straw be baled and then protected from the weather. In case portions of stacks become wet by rains they should be scattered over the fields or burned as soon as possible. When it is found impracticable to handle straw in this way the wet portions of the stacks may be treated with borax as described above. Where it is important that straw be kept for winter feeding, and baling is impracticable, the stacks may be im-

proved to some extent by piling up the straw and leaving the sides of the stack practically vertical. It is in the scattered portions of the straw stacks around the base where the fly breeds in greatest numbers, and by disposing of this portion of the stack and leaving the remainder well rounded up, the chances for fly breeding are much lessened.

TO PROTECT LIVE STOCK FROM FLIES.

The problem of protecting live stock, especially milch cows and work animals, from flies is almost continuously before the farmer. Most of the repelling substances which might be named are of only temporary value, as with practically all of them the flies begin biting again within a very few hours after application. This necessitates considerable expense for the ingredients and the application of the material, and with many substances some ill effects are produced on the host by their continued application. A mixture of fish oil (1 gallon), oil of tar (2 ounces), oil of pennyroyal (2 ounces), and kerosene (½ pint) applied lightly to the parts most attacked by the flies will tend to keep them off.

Work animals may be largely protected by placing blankets over their backs and trousers on their legs. Dairy stock and horses when in barns may be protected by having the barns screened and brushing the flies off with burlap as the animals are driven in. The use of hodge flytraps in a few of the windows will also aid in the destruction of the flies which endeavor to escape from or enter the barn. This flytrap is of simple construction. When large numbers of flies are within a barn the catching of the flies may be facilitated by darkening the windows which are not fitted with traps. The trap is described fully with illustrations in the department's Farmers' Bulletin No. 540, entitled "The Stable Fly," which will be furnished free to those desiring more complete information regarding the pest.

NEW REGULATIONS FOR FEDERAL MEAT INSPECTION.

The new meat-inspection regulations governing the slaughtering of cattle, sheep, swine, and goats, and the preparation of meat food products in inspected establishments, were signed by the Secretary of Agriculture on July 15, 1914.

All the regulations become effective November 1, 1914, except those governing imported meats, which go into effect January 1, 1915.

The Department of Agriculture is limited by law to jurisdiction over the slaughtering and packing establishments which sell their products in interstate or foreign commerce. These establishments slaughter 60 per cent of the meat used in the United States. The slaughtering and packing establishments which sell their product wholly within the State in which the animals are slaughtered are beyond the jurisdiction of the department.

The new regulations, which occupy 87 printed pages, codify the many amendments and rulings made since the adoption of the old regulations on April 1, 1908, and also add to the requirements a number of features suggested by eight years' experience in meat inspection and conforming with recent scientific discoveries.

The more important changes, made as the result of the development of veterinary science and practical experience in meat inspection, are as follows:

DISEASED ANIMALS TO BE CONDEMNED PRIOR TO SLAUGHTER.

The new regulations provide that inspectors shall make a rigid ante-mortem inspection, and if they find clear evidence in the live animal of the existence of a disease which unfits its meat for food they shall condemn the animal and prevent its entry for slaughter into the food-preparing departments of the establishment. The animal so condemned must be slaughtered in a separate place and put at once into the denaturing tank to be turned into fertilizer or other nonedible products. This rule is more strict than the ante-mortem inspection prescribed in the old regulations.

Heretofore animals showing some evidence of disease on ante-mortem inspection were slaughtered on the same killing floors as healthy animals, and were not finally condemned until they were subjected to post-mortem examination.

Under the new rules, where the ante-mortem inspector suspects a live animal of having a disease which might render it unfit for food, but is not certain of this condition, he will, as in the past, mark the animal "U. S. Suspect," which will make its carcass subject to special post-mortem examination. The ante-mortem inspector is also authorized to detain the animal for further observation and taking of temperature in cases where that seems desirable in reaching a decision.

All animals at the time of slaughter, even though no symptoms of disease are visible on ante-mortem examination, are subject to careful post-mortem examination before the meat can be marked "U. S. Inspected and Passed" and allowed to leave the establishment.

WITHDRAWAL OF INSPECTION.

The regulations prescribe that any inspected establishment which violates any regulation may suffer the penalty of having all inspection withdrawn. This would mean that such establishments could not ship any meat in interstate commerce or abroad. This is designed to strengthen the department's authority to compel establishments to observe sanitary conditions.

PACKERS TO BE PERMITTED TO SELL SECOND-CLASS STERILIZED MEAT ON A PLAN SOMEWHAT SIMILAR TO THAT FOLLOWED BY THE GERMAN AND AUSTRIAN GOVERNMENTS.

In view of the present shortage and high prices of meat, and the fact that every pound of meat that is condemned necessarily adds to the cost of producing meat that is passed, the new regulations provide

measures whereby the packers can sterilize and cook thoroughly certain classes of meat and sell it in cans or sealed containers, labeled plainly "Second-class Sterilized."

This sterilized cooked meat, which the packers are to be permitted to sell as "Second-class Sterilized," is the meat of portions of animals the fat of which the old regulations permitted the packers to make into edible lard and tallow. The process of rendering served to sterilize the fat and make it entirely hygienic. The new plan extends the same principle so as to utilize the lean portions of this meat which heretofore packers have not been allowed to sell for food purposes.

This action follows scientific investigations made by specialists of the department, and by independent veterinarians and physiologists, which have made it clear that large quantities of meat which are perfectly good food when thoroughly cooked have been condemned because of the presence of strictly localized cysts or lesions in animals. This meat is of the type which the German and Austrian Governments have long permitted their packers to sterilize by cooking and sell at shops in a cooked condition.

This meat which, cooked, finds ready sale at a lower price than raw meat in Germany and Austria, consists of portions of the flesh of animals which have localized cysts or lesions which make the immediately affected muscle or tissue unsuitable for food, but which do not affect the remaining flesh of the animal or render it unhealthful. Portions (usually organs or glands) containing cysts or lesions are cut away and condemned. These cysts and lesions do not come from any of the highly dangerous diseases, for any indications of which the regulations require the condemnation of the whole carcass.

Under both the old and the new regulations, in cases where the diseased condition is trivial and strictly localized, the unaffected portions of the carcass, which are free from any suspicion of disease, are passed for food and allowed to be sold in the raw state.

On the other hand, all carcasses and all parts diseased to an extent rendering them unfit for food are condemned. Between these two classes lies the class of meat which may be sterilized under the new regulations. This consists of parts of carcasses believed to be entirely healthful, but which come from carcasses affected to a somewhat greater extent than would allow the passing of these parts for food in the raw state, because these parts may contain a chance cyst which, if eaten raw, might lead to tapeworm or other diseases. These accidental cysts or lesions, even if present, are rendered entirely harmless by thorough sterilization in cooking.

While the packers of Germany and Austria for many years have widely availed themselves of this method of saving, by cooking, a huge waste of meat, it is not known how far the American packers will care to follow the practice. It is believed, however, that if it is undertaken it will make available a large quantity of cooked meat which is now wasted.

POST-MORTEM INSPECTION.

The provisions relating to the post-mortem inspection of carcasses have been made clearer and more explicit, so as to make the rules under which the inspectors pass or condemn carcasses or portions of them exact and in accordance with the latest scientific knowledge. The regulations governing the carcasses of hogs suspected of hog cholera have been made much more stringent.

SAFEGUARDING INSPECTION MARKS.

The rules and regulations governing the disposal of condemned meat and the use and integrity of the Federal marks have been redrafted to meet fully all conditions which have developed during the past six years. As a result, it is made certain that the mark "U. S. Inspected and Passed" can appear only on meat that has passed a rigid ante-mortem and post-mortem inspection at the hands of skilled veterinarians.

RAW PORK PROHIBITED IN CERTAIN FOOD PRODUCTS.

On account of the danger from trichinae in pork and the lack of any known method of inspection which affords an absolute safeguard, the regulations prescribe that no muscle tissue of pork shall be allowed as an ingredient of any article such as summer sausage, or similar foods, which customarily are eaten without cooking. To be included in articles, which may be eaten without home cooking, the pork must have been subjected to a temperature sufficient to destroy all live trichinae, or subjected to some other approved treatment which may hereafter be discovered.

SANITARY REGULATIONS.

The regulations governing the sanitary condition of packing establishments, the cleanliness of employees, and the care of utensils and instruments, have been redrafted into a series of definite rules. This, it is believed, makes compliance with the rules easier on the part of the packers and makes detection of violations simpler for the inspectors.

These rules are very explicit as to the provision of washing and toilet facilities for the help, as to the condition of clothing, and as to the cleanliness of the hands of those handling the meat. The rules also explicitly prohibit the passing of meat which has been allowed to touch floors or become contaminated by contact with condemned meat or knives used in butchering diseased meat.

IMPORTED MEAT.

The regulations regarding imported meats are redrafted so as to be more comprehensive and complete. Each foreign country from which meats are being shipped to the United States will be supplied with copies, as will United States consuls, so that a strict compliance with them may be had.

HOW THE FARMER CAN USE THE FACILITIES OF THE UNITED STATES DEPARTMENT OF AGRICULTURE.

[Continued from News Letter No. 50.]

PLANT INDUSTRY'S OFFICE OF ECONOMIC AND SYSTEMATIC BOTANY.

The office of the Bureau of Plant Industry that does systematic collecting of plants and plant products of economic value is called the Office of Economic and Systematic Botany. Its collection contains samples of the principal economic plants of the world.

The collections of this office are being constantly increased by additions from investigators of drug

plants, poisonous plants, perfume plants, forage plants, ornamental plants, economic trees and shrubs, and cultivated fruits, nuts and vegetables, to all of whom the collection is accessible.

One of the tasks of this office, undertaken for the nursery trade, is the preparation of complete lists of ornamental trees and shrubs now offered for sale in this country, with reference to the catalogues where descriptions of them may be found. By this means uniformity is secured in applying names to them. If these plants are already known under established names in the trade, it will not be possible to exploit them as novelties under new names.

In its investigation of range forage plants the office is preparing to publish such information as is available regarding their botanical character as well as their value and the character of the soil and climate suitable for their cultivation. In this connection the office cooperates with the Forest Service in its attempt to develop an increased forage crop in the national forests that have been overgrazed, the result to be accomplished in some cases by natural or artificial reseeding; in others by the temporary closing of the overgrazed areas through the modification of the present system of running stock; in others by the introduction of new varieties of forage plants adapted to local conditions.

It is also the province of this office to name plants sent in for identification, such as plants injurious to cattle or sheep; noxious weeds; plants discovered to be especially adapted in certain localities for forage or for binding the sand on shifting dunes or along irrigating ditches, or for hedges. Other plants sent in may be suggested as sources for rubber or fiber or as remedies for certain diseases. Once the botanical identity of the plant in question is established, and only after this has been done, can inquiries regarding the plant be definitely answered.

In introducing new economic plants from abroad, certain ones are found to be more suitable than others. It is the duty of this office to study the various introduced plants botanically, so that information may be recorded as to those found to be most desirable.

One of the most important problems which this office is studying is the adaptation and development of crop plants suited to vast tracts of what is known as "acid land," unsuited to the cultivation of the ordinary crops. The office's investigations have shown that certain plants, especially those of the heather and blueberry family, thrive only in such soils. Methods have been devised to propagate these plants by cuttings and by processes of breeding and selection, so that superior varieties have been produced. As a result, blueberry culture bids fair to become an important industry in localities where great areas of land have been hitherto considered unfit for cultivation.

Among the plants used by the American Indians, many have valuable medicinal or nutritive properties, and some are narcotic or poisonous. Information regarding these plants derived from the Indians themselves is often of great value and is in danger of being lost. This should be treasured to serve as a basis of future experiment. Already from the American Indian we have derived coca, the source of cocaine; cinchona, the source of quinine; cascara and many other valuable drugs whose virtues they detected long before the discovery of America. Much information of this and similar character was collected by a botanical explorer during more than 40 years of active work in the southwestern United States and Mexico. His valuable notes are now being arranged in form available for public use.

[To be continued.]

BACTERIA MULTIPLY RAPIDLY IN WARM MILK.

Twenty degrees of temperature make a great deal of difference in the rapidity with which bacteria multiply in milk, according to the dairy division of the department. There is a certain temperature which is most favorable for the growth of these tiny organisms. Below this temperature the growth is retarded; the lower the temperature the slower is the growth. Bacteria that increase rapidly at 70° F. grow much more slowly at 50°, and at 40° grow hardly at all. Some kinds, however, tend to increase even at the freezing point.

The rapidity with which bacteria multiply in milk at different temperatures is shown in the following table:

Temperature of milk.	Number per cubic centimeter at beginning.	Number at end of 6 hours.	Number at end of 12 hours.	Number at end of 24 hours.	Number at end of 40 hours.
°F.					
50	10	12	15	41	62
68	10	17	242	61,280	3,574,990

Many of the bacteria commonly found in milk produce no apparent change in the milk. Others may change the flavor without changing the appearance, while some of the most common types of bacteria cause marked changes in both appearance and flavor. In this class are included the bacteria which sour the milk by converting the sugar into lactic acid and those which form a sweet curd. Another type destroys the casein and albumin in the milk and causes putrefaction and bad odors.

The number of bacteria in milk depends, first, on the number of bacteria in the udder; second, on the amount of contamination from outside sources; and, third, on the rapidity of the bacterial growth. The rate of growth depends on the temperature at which the milk is held.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1914

Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

VOL. II WASHINGTON, D. C., AUGUST 26, 1914 No. 3

AUG 27 1914

INDEX FOR VOLUME I.

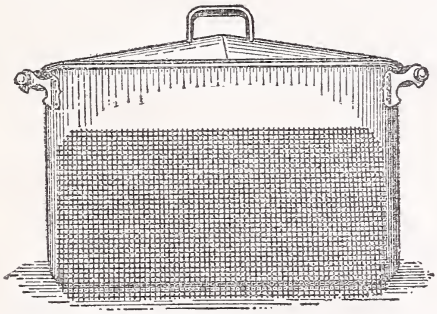
A complete subject index of Volume I of the Weekly News Letter is now in course of preparation. This index will be very full and will enable those who have preserved their copies of the News Letter to refer instantly to all articles treating any specific subject. This index will be issued as a supplement to the News Letter, but will be supplied only to those who send in a request for it.

Those wishing this index should address a postal card to the Editor and Chief, Division of Publications, U. S. Department of Agriculture, Washington, D. C. Copies will be mailed free to those requesting it as soon as the supplement is issued.

TIME TABLE FOR GIRLS WHO CAN.

The housewife who desires to can fruits may make use of the following time-table which the department has issued for the girls who are members of its canning clubs. Before attempting to can, it is best to have a timepiece where it can be conveniently seen, for by keeping exact track of the minutes much better results may ordinarily be obtained than by "intuitive guessing."

In the time table there is a column for each of four different portable canning outfits, and in each column are the number of minutes that various fruits and



A tin wash boiler with a false bottom made of wire netting, used as a convenient sterilizer in canning.

vegetables should be boiled in each particular outfit before they are properly prepared. Proper preparation means the complete sterilization by boiling so that the germ life which might cause the product to spoil will be absolutely killed.

Almost every housewife has a tin clothes boiler which she can easily convert into a convenient sterilizing vat in which to boil the products which she desires to can. The only things necessary are a tight-fitting cover and a false bottom. (See figure.) The false bottom is made of wire netting and is absolutely necessary in order to prevent the jars from coming into contact with the bottom of the boiler. If the jars come into contact with the bottom they will break during the boiling.

To make these bottoms the housewife may take an ordinary No. 16 wire netting of half-inch mesh which is cut to fit the bottom of the boiler. If the netting is not available, thin pieces of wood will answer the purpose. A patent open-door steam cooker is even more convenient than a clothes boiler. Even if she has neither of these, the housewife need not hesitate to can, for a deep saucepan or tin bucket tightly covered, will answer the purpose.

COMMERCIAL CANNING OUTFITS ARE RECOMMENDED.

In the following table there are three columns (Nos. II, III, and IV) in which the times for boiling are given for three different types of commercial canning outfits which the housewife might profitably buy. These are great labor-saving devices, and their prices range from $5 to $15. A book of instructions accompanies each. The busy housewife who has one of these portable canners may do the work out of doors and is relieved from cleaning up the "muss" after each canning experience. Operators also have fresh air and the freedom necessary for good work instead of the heat and confinement of the kitchen.

The water-seal outfit (No. II) is a combined hot-water and steam canner with a self-sealed top which permits the products to be boiled at a temperature two degrees higher than the homemade outfit will. This means that for many things the time of boiling is shortened. Corn, for instance, takes only 180 minutes where it takes 240 minutes in the homemade outfit.

The third or fourth canning outfits (Nos. III and IV) may also be obtained from a reliable dealer. These depend entirely on steam rather than hot water for cooking the fruit or vegetables and are called "steam-pressure cookers." The cooker with 5 pounds pressure (No. III) does the work in much quicker time than the water-seal outfit, and the cooker with a pressure of 10 pounds or more (No. IV) in some instances will accomplish the work in half the time needed for the 5-pound-pressure cooker. For example, corn may be satisfactorily prepared in the 5-pound-pressure cooker in 60 minutes and in the 10-pound-pressure cooker in 40 minutes.

One valuable feature of these commercial portable canning outfits is that they may be handled by children as well as by older persons, and young girls who are trying to learn how to can may use them out of doors without interfering with the routine kitchen work. There is also a commercial portable hot-water bath outfit which may be purchased to take the place of the homemade outfit (No. I).

Select the outfit which seems to fit your needs best. *If possible see it in operation before buying.* The department will furnish inquirers with a list of reliable firms that turn out different kinds of commercial canners. Address, Office of Farm Management.

Canning time table.

[In "Size of can" column, No. 2 and No. 3 are standard sizes, about equivalent to 1 pint and 1 quart, respectively.]

Products to be canned.	Size of cans, No. 2, pint, No. 3, quart.	I. Home-made hot-water bath outfits, at 212°.	II. Water-seal outfits, 214°.	III. Steam-pressure cooker, 5 pounds or more.	IV. Pressure cooker, 10 pounds or more.
		Minutes.	*Minutes.*	*Minutes.*	*Minutes.*
Apples, whole or sliced, for pie filling	3	15	15	12	6
Apricots	3	15	12	12	6
Asparagus and other greens	2 or 3	60	60	45	35
Apple cider	2 or 3	20	15	12	10
Beans, lima or string	2 or 3	90	60	60	30
Blackberries, dewberries	2 or 3	12	10	6	3
Cherries, peaches	2	15	12	10	5
Corn (without acids)	2	240	180	60	40
Grapes, pears, plums	2	15	15	10	6
Hominy	3	60	50	40	35
Huckleberries	2	10	8	6	3
Okra and tomatoes combined	2 or 3	50	50	40	30
Peas, beets, carrots, etc	2	60	60	45	35
Pineapple	2 or 3	30	25	10	10
Raspberries	2 or 3	15	12	8	5
Sauerkraut	3	50	50	40	25
Sweet potatoes	3	80	70	60	40
Strawberries	3	15	12	8	5
Tomatoes	2 or 3	22	20	10	6
Tomatoes and corn	2	80	70	60	40
Grape juice	2	15	15	10	5
Quince	3	30	25	15	10
Tomato juice	2	20	20	15	10
Pumpkin and squash	3	60	60	45	35
Fish, pork	2	200	200	120	60
Chicken, beef	3	250	240	180	40
Figs	3	30	20	10	5
Rhubarb	3	15	15	10	5

For altitudes of 4,000 feet or more above sea level add about 25 per cent time to this schedule.

PROFIT FROM HOGS FOLLOWING CATTLE.

A careful accounting system applied to 24 Iowa farms managed by men known to be careful and experienced feeders of cattle show conclusively that the practice of following cattle with hogs is profitable, except possibly when young cattle in large numbers are fed on ground corn and the cost of grinding is very low. The best authorities believe that with the present narrow margin on fat cattle, it is inadvisable to feed without hogs.

On the 24 Iowa farms in question, during the feeding year beginning in the fall of 1909, the average profit on 961 cattle fed in bunches was $2.05 per head, not counting the profits on the hogs following them. The prices received for the cattle were very satisfactory. The 1,504 hogs following these steers, and which were given extra grain, were sold in the spring of 1910 with a profit of $6.67 per hog, which, if credited to the steers, gave a profit of $12.49 per steer. In the following feeding year, 1910–11, prices were unsatisfactory and this caused a loss of 78 cents per head on 1,138 cattle fed on 28 farms. The 1,646 hogs following these steers, however, returned an average profit of $3.33, and when this profit on the hogs was credited to the steers, there was a net profit of $4.04 per steer.

From this it appears that when the steers sell for enough to break even, or if they show a slight loss, the hogs that follow will ordinarily make sufficient gains from the wasted corn to make the feeding operations profitable. Not only is steer feeding more profitable when hogs are used, but the hogs usually prove more remunerative than if fed alone, because of the large amount of feed they secure from the droppings.

The number of hogs to follow a steer will depend on the method of feeding. Some farmers feed the steers more corn than they will eat and run extra hogs, figuring on the hogs getting the waste. While this may be a good policy when corn is cheap, it is doubtful if it should be practiced with high-priced grain. It is usually best to figure on about one shoat per steer when shelled corn is fed and two when ear corn is fed. In case the corn is ground or soaked, or silage is used, the number of hogs would be less. The aim should be to run enough hogs to clean up all the waste corn.

The daily gains that the hogs make will depend materially on the condition of the feed yard. They will also be affected by the quantity of grain given and the form in which it is fed. In general, it is probable that when a steer is fed one-third of a bushel of shelled corn a day, approximately three-fourths of a pound of pork will be obtained. When ear corn is fed the gains will be greater. On the other hand, if corn meal or corn-and-cob meal is fed the amount of pork produced is very small, as the grain is much better utilized by cattle. In fact, experience and experimental evidence show that when corn is most efficient for steers it is least so for hogs, and vice versa.

The gain will be greater if the steers are fed some leguminous hay or some concentrate high in protein, such as oil cake. Nearly all farmers give the hogs corn in addition to that secured from the droppings. Corn for the hogs should always be fed away from the cattle and should usually be given first, so that the steers may not be annoyed. The hogs should also be provided with separate watering places and separate places to lie down.

The paving of feed lots is particularly important when hogs are following cattle. It has been definitely shown that hogs following steers on paved lots make nearly 1 pound more of pork per bushel of corn fed to steers than do those in ordinary mud lots. With pork at 6 cents a pound, this item will amount to about $1.50 per steer. Moreover, with the unpaved lot it frequently happens that a period of warm weather occurs during the winter and the lots become very muddy, making it necessary to ship cattle before they are ready. This sometimes causes a congestion of the

market, with a consequent drop in prices. The feeder who is forced to ship because of muddy lots may lose more in one year than the cost of paving. Not only will the cattle make better gains, but animals that are covered with manure and mud are usually discriminated against to the extent of 10 to 15 and sometimes 25 cents per hundredweight. If the manure is dropped in open yards and exposed to the weather, much plant food is lost. On the other hand, with that dropped on paved floors and in sheds, the losses may not be so great.

These results are described in Farmers' Bulletin 588, "Economical Cattle Feeding in the Corn Belt."

LATE SOWING OF WINTER WHEAT TO COMBAT HESSIAN FLY.

The seeding of winter wheat should be delayed as much as possible to combat the Hessian fly, whenever this pest is present. Throughout the Eastern United States, where winter wheat is generally grown, this fly sometimes causes damage amounting to over a million dollars in one year. Present indications are that the damage done by the pest this year will be considerable. Cooperative late-sowing by all the wheat growers in the community, accompanied by systematic destruction of stubble and other breeding places for the fly, seems to be the best means to reduce its devastation.

Wheat should, however, be sown early enough to allow the plants to become well established before winter sets in, yet not so early as to allow them to become jointed. If the first frost is unusually delayed the wheat grower would better plant, even though there is still danger of injury from the fly, for otherwise his losses may be greater from the failure of young, poorly-rooted plants to survive the winter.

The best time for sowing winter wheat is about the first week in September in the latitude of northern Ohio. In the latitude of southern Ohio, the last week of September is best. Proceeding still farther south the best date is still later, being about the middle of October for central Tennessee and central Oklahoma, and about the first of November for northern Georgia. In such districts as the Piedmont section of Virginia allowance must be made for elevation. In the northern part of this State the middle of September seems the best date for sowing, while in the southern part, the last week in September is preferable.

The general rule for seeding is that there should be a difference of one day for each 10 miles of difference in latitude, and seeding should be approximately one day earlier for each hundred feet of increase in elevation. There is usually, however, a period of several weeks in all the winter-wheat area where sowing may take place with about equal results. This period is longer as one proceeds to the southward.

RATE OF SEEDING.

The quantity of seed that should be sown under ordinary conditions in the humid winter-wheat areas is 6 pecks per acre. This may be varied according to the size of kernel of the variety used, the condition of the seed bed, the fertility and character of the soil, and the date of seeding. When the grains are small, the seed bed in good condition, the soil rich, warm, and well drained, and the seeding early, 5 or even 4 pecks per acre are often sufficient. Where opposite conditions exist, 7, 8, or even 10 pecks may give more profitable results. It is advisable to adhere to these rules with all varieties, regardless of any claims of exceptional tillering ability that may be made.

Other details of a general character regarding "The Culture of Winter Wheat in the Eastern United States" are given in a bulletin of the department bearing that title (No. 596). It can be had free by wheat growers on application to the department at Washington, D. C.

NEW PUBLICATIONS OF THE DEPARTMENT.

The Division of Publications states that an increasing number of requests for publications are being received daily with incomplete address. Many correspondents fail to sign their names. Some do not give post-office address. Persons living in large cities fail to furnish the street address; and some give as the post-office address the name of an office that has been discontinued for years. The department is unable to handle correspondence unless the signature is legible and the post-office address given in full, with street number or rural route number, as the case may be. Correspondents are therefore earnestly requested to see that the complete address is given in all communications addressed to this department.

The following new bulletins will be sent free upon application to the Editor and Chief, Division of Publications, Department of Agriculture, Washington, D. C., as long as the supply lasts. When this department's supply is exhausted publications can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., by purchase only, and at the prices noted herein.

Birds in Relation to the Alfalfa Weevil. 64 pages, 8 illustrations. Contribution from the Bureau of Biological Survey. (Professional Paper.) (Department Bulletin 107.) Price, 15 cents.

This bulletin discusses the food habits and economic status of birds, and of the toad, frog, and a few other vertebrate enemies of the alfalfa weevil in Utah.

The Sequoia Pitch Moth, A Menace to Pine in Western Montana. 11 pages, 5 illustrations. Contribution from the Bureau of Entomology. (Professional Paper.) (Department Bulletin 111.) Price, 5 cents.

This bulletin is a report on an insect infesting lodgepole pine in the Rocky Mountain region of Montana.

Experiments in the Destruction of Fly Larvæ in Horse Manure. 26 pages, 4 plates. Contribution from the Bureau of Entomology. (Professional Paper.) (Department Bulletin 118.) Price, 10 cents.

This bulletin reviews some recent experiments whose results point to an economical, practical, and effective way of destroying fly larvæ by chemically treating manure. It includes an account of the effects of certain larvicides on the value of manure, as estimated by chemical and bacteriological analyses.

The Temperature of the Bee Colony. 29 pages, 8 illustrations. Contribution from the Bureau of Entomology. (Professional Paper.) (Department Bulletin 96.) Price, 5 cents.

A study of the effects of temperature on bees, and of interest to beekeepers generally.

Farmers' Bulletins.

Homemade Silos. 47 pages, 37 illustrations. Contribution from the Bureau of Animal Industry. (Farmers' Bulletin 589.)

This bulletin gives detailed instructions for building three types of silos, namely, concrete, stave, and the modified Wisconsin silo. The part relating to the stave silo is a revision of Bureau of Animal Industry Circular 136.

The Classification and Grading of Cotton. 22 pages, 16 illustrations. Contribution from the Bureau of Plant Industry. (Farmers' Bulletin 591.)

Names, classifies, and describes the different grades of cotton.

The Road Drag and How It Is Used. 15 pages, 8 illustrations. Contribution from the Office of Public Roads. (Farmers' Bulletin 597.)

This bulletin contains instructions for constructing road drags and directions for their use in the repair and maintenance of earth, top-soil, sand-clay, and gravel roads.

Pasture and Grain Crops for Hogs in the Pacific Northwest. 27 pages, 9 illustrations. Contribution from the Bureau of Plant Industry. (Farmers' Bulletin 599.)

This publication, or reprint of Department Bulletin No. 68, issued February 25, 1914, is intended to encourage hog raising in the Pacific Northwest; it is especially adapted to Washington, Oregon, and Idaho.

An Outfit for Boring Taprooted Stumps for Blasting. 5 pages, 4 illustrations. Contribution from the Bureau of Plant Industry. (Farmers' Bulletin 600.)

This paper gives detailed information concerning a power outfit for boring taprooted stumps for blasting. In those sections of the country where such stumps are abundant it will be of value in reducing the cost of clearing land for agricultural purposes.

MILK CANS SHOULD BE JACKETED.

The Dairy Division has just completed a series of tests on the change in temperature of milk in cans during transportation from the farm to the consumer. These tests established the importance of jacketing cans of milk with some appropriate insulating material.

It has been found that milk that has to be sent only short distances or preserved for only a few hours should maintain a temperature of less than 50°. Even at these temperatures some bacteria will multiply and cause the souring of the milk, but the increase is slow and during a few hours no serious results will occur. A temperature well below 50° F., however, materially decreases the rate of bacterial growth.

On the other hand, where milk is to be shipped long distances, the initial temperature must be lower, assuming that no provision is made for maintaining the original temperature during transportation. Where milk is in transit for several hours, it is necessary to cool it down to near the freezing point. So soon as the milk can, however, is exposed to air temperature, and especially to the sun, the temperature of the milk begins to rise very rapidly, and every precaution should be taken to keep it from being raised by the outside heat.

A series of experiments was recently made in shipping milk cooled to 50°. In these cases the cans were set in an open truck with no covering to shield them from the direct rays of the sun. The milk was hauled a distance of 13 miles, and the average air temperature during the trip was 82.65°. The experiment showed that the cans that were hair-quilt jacketed showed a rise of only 5½° in three hours in the temperature of the milk. The cans that were wrapped with wet burlap showed a milk temperature of 58½° in the same period, or a rise of 8½°. The milk in the unjacketed cans rose in three hours to 78½°, or a rise of 28½°.

It is obvious from these figures that it pays to jacket the cans in order to maintain a low temperature during transportation.

REORGANIZATION OF FIELD WORK OF BUREAU OF CROP ESTIMATES.

For the information of the crop correspondent in each State the announcement is made that on July 1 the former State statistical agents of the Bureau of Crop Estimates were discontinued and a number of new field agents were appointed. It was the intention of the department to have a field agent in each State, to whom the aids of the former State statistical agents would report, but it was not found practicable to carry out the plan in all States. Until further notice the aids in each State should report to the agents whose names and addresses follow:

Territory.	Name.	Address.
Maine, New Hampshire, Vermont, Massachusetts.	Sanders, V. A	Wakefield, Mass.
Rhode Island, Connecticut, New York.	Kelsey, F. G	Williamstown, N. Y.
New Jersey, Pennsylvania.	Morgan, G. L	West Market Post Office, Philadelphia, Pa.
Delaware, Maryland, and West Virginia.	Darg, J. J	Bryantown, Md.
Virginia and South Carolina.	Olmsted, V. H	Clarendon, Va.
North Carolina	W. A. Withers	West Raleigh, N. C.
Georgia	Shaw, T. C	Atlanta, Ga.
Florida	Rolfs P. H	Gainesville, Fla.
Ohio	Cochrun, J. L	No. 46 Federal Building, Columbus, Ohio.
Indiana	Bryant, G. C	Indianapolis, Ind.
Illinois	Fessenden, S. D	Indianapolis, Ind.
Michigan	Church, Verne H	Lansing, Mich.
Wisconsin	Sanborn, G. A	Fox Lake, Wis.
Minnesota	Kirk, P. H	Fergus Falls, Minn.
Iowa	Pinney, F. S	Council Bluffs, Iowa.
Missouri	Logan, E. A	Columbia, Mo.
North Dakota	Surratt, A. J	Grand Forks, N. Dak.
South Dakota	Herbrandson, H. O	Brookings, S. Dak.
Nebraska	Anderson, A. E	Box 706, Lincoln, Nebr.
Kansas	Richardson, J. W	Olathe, Kans.
Kentucky	Gist, F. W	Nashville, Tenn.
Tennessee	A. A. McCorkle	Shelbyville, Tenn.
Alabama	Ramey, J. A	Waynesboro, Miss.
Mississippi	P. W. Shaw	Carrollton, Miss.
Louisiana	Dennee, J. S	Box 99, New Orleans, La.
Texas	Gray, F. N	Houston, Tex.
Oklahoma	Woodworth, J. E	Guthrie, Okla.
Arkansas	Lundy, Elmer J	Mena, Ark.
Montana	Rankin, J. O	Helena, Mont.
Wyoming	Cook, A. D	Douglas, Wyo.
Colorado	Putnam, W. W	Fruita, Colo.
New Mexico, Arizona	Harrison, L. M	Albuquerque, N. Mex.
Utah, Nevada	Paxton, E. C	Ogden, Utah.
Idaho	Hitt, A. F	Weiser, Idaho.
Washington	Marchetti, E. T	423 Federal Building, Spokan, Wash.
Oregon	Kent, F. L	Portland, Oreg.
California	Rickards, J. E	508 Custom House, San Francisco, Cal.

No change has been made in the methods of reporting by county and township reporters, who will continue to forward their schedules direct to Washington.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1914

Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

VOL. II WASHINGTON, D. C., SEPTEMBER 2, 1914 No. 4

AUG 27 1914

HOW VIRGINIA DEALT WITH SHEEP-KILLING DOGS AND FOSTERED SHEEP RAISING ON WASTE LANDS.

The State of Virginia at the recent session of its legislature has passed a novel dog law, which it is believed will enable that State to raise sheep successfully on a large amount of waste land heretofore idle. This law makes it a misdemeanor punishable by a fine up to $50 for the owner to allow his dogs to run at large in the country.

This waste land, while entirely suitable for sheep raising, was not well adapted to cattle, for the reason that winter feed in those districts was too high to make the wintering of beef cattle profitable. All that stood in the way of a profitable sheep industry was dogs, which were kept in large numbers in the shanty settlements. These dogs, which were rarely fed at home, lived on the young game during the spring and summer and preyed on the sheep whenever they were not watched, and especially in winter.

The old dog-license law merely meant that a dog was commonly $2 a year hungrier for sheep. The general law permitted a sheep owner whose flock had been ravaged to sue the owner of the dog, but commonly the owner owned nothing but dogs and the sheep farmer could not recover. Moreover, if the sheep owner shot a stray dog on his premises, the owner of the dog could sue the farmer for damages. The farmers of Virginia grew tired of having their waste land idle and finally induced the legislature to pass the accompanying dog law. This law, when adopted by a county, makes it a misdemeanor for the owner of a dog to allow that dog off his own property unless he is with the dog. In the case of incorporated villages and towns the law permits the licensing of dogs, but makes it a misdemeanor for them to be alone outside of the incorporated limits.

The indirect effect of this law is to allow any farmer to shoot a lone dog on his property. The owner of the dog, before he can bring suit for damages for the killing of the dog, necessarily must establish proof that the dog was at large and thus subject himself to a fine up to $50.

Although the law was passed very recently, a number of counties have signified their intention of making it a county rule, and in these counties owners of waste land are already making preparation to establish flocks of sheep.

The text of the law is as follows:

TO PROHIBIT THE RUNNING AT LARGE OF DOGS, AND TO PROVIDE A PENALTY FOR THE VIOLATION THEREOF.

Be it enacted by the General Assembly of Virginia, That it shall be the duty of every person owning or having in charge any dog or dogs, to at all times confine such dog or dogs to the limits of his own premises or the premises on which such dog or dogs is, or are, regularly kept: *Provided*, That nothing in this act shall be construed to prevent the owner of any dog or dogs, or other person or persons having such dog or dogs in his or their charge, from allowing such dog or dogs to accompany such owner or other person or persons elsewhere than on the premises on which such dog or dogs is, or are, regularly kept.

Any person violating this act shall be deemed guilty of a misdemeanor and shall be fined not less than two nor more than fifty dollars, one-half of such fine to be payable to the officer or other person furnishing the evidence upon which such owner or other person having such dog or dogs in his charge is convicted of such violation.

This act shall not apply to the running at large of any dog or dogs within the corporate limits of any city or town in this State that require a license tag to be kept on dogs. But this act shall not apply in any county in this State until the same has been adopted by the board of supervisors of such county.

WINDFALL APPLES MAY BE CANNED AND USED FOR PIE FILLING, APPLE SAUCE, ETC.

Windfall apples, which are often left on the ground to rot, may be made to serve a useful purpose by the economical housewife. A little forethought and labor at this time of the year spent on a despised product of the orchard may supply the winter table with many an appetizing and wholesome dish which otherwise would either be lacking or supplied at a higher cost.

Windfall apples may be canned whole and used as a breakfast dish, for dessert, salads, or baked. There will be many which are too much marred for canning whole. In this case, the marred places may be removed and the apples sliced and canned for either pie filling or for apple sauce. Following are the recipes for thus taking care of windfall apples:

WHOLE WINDFALL APPLES CANNED.

Select firm, not overripe apples. A great difference in the canned products will be noted in the different varieties of apples. This recipe is intended for firm and preferably tart varieties. Some varieties will require less time and some more.

Remove blemishes, cut out core. Blanch for 2 minutes in boiling water; plunge in cold water. Pack in tin cans or glass jars and add just a little very thin sirup. Put on rubber and top and partially tighten. (Cap and tip tins.) Sterilize 20 minutes in hot-water bath, 15 minutes in water seal, 10 minutes in steam-pressure outfit, or 6 minutes in pressure cooker. Remove jars, tighten covers, and invert to cool.

Apples canned in this way make a product that is generally wasted available for apple salads, dumplings, breakfast apple dishes, apple potpies, and baked apples.

WINDFALL APPLES FOR PIE FILLING.

Peel and core; slice; scald 2 minutes in boiling water; plunge in cold water; pack in glass or tin, and add about 1 teacupful of hot, thin sirup to each quart; put on rubber and top, partially tighten (cap and tip tins); sterilize 16 minutes in hot-water bath, 12 minutes in water seal outfit, 10 minutes under 5 pounds of steam, or 4 minutes in pressure cooker; remove jars, tighten cover, invert to cool. *This is a good method of utilizing the good portions of partially decayed apples.*

Note.—The thin sirup mentioned in these recipes is made as follows: One and one-half cups of sugar to 1 cup of water, brought to boiling.

BOY SCOUTS TO CAN WINDFALL APPLES.

The Boy Scouts of Cortland, N. Y., have rented an entire apple orchard and are planning to market the good fruit and to can all the windfall apples in the manner described above. The orchard, which is being rented for a period of 3 years, contains 165 trees, most of them in good bearing. Under the leadership of one of the department's agents and the local scout master, the boys have pledged themselves to prune, spray, and cultivate the orchard; to grade, crate, and find a market for all fresh apples, and to save all possible waste by canning the windfalls so that the enterprise will yield maximum returns.

The boys are erecting a temporary building as headquarters for the equipment, where they may also change clothing, and grade, pack, and crate the fruit.

WHITE GRUBS LIKELY TO CAUSE UNTOLD LOSSES IN CERTAIN STATES IN 1915.

The destructive May beetles, or so-called June bugs, as was previously predicted by the department, were extremely abundant the past spring in northeastern Iowa, southern Wisconsin, and northern Illinois, parts of Minnesota, the southern part of Michigan, and northern Ohio; also in northeastern Pennsylvania, southeastern New York, parts of Connecticut, and New Jersey. This is indicative of a great abundance of white grubs in 1915, and judging from the greater abundance of beetles in most of these sections this spring than three years ago, the grub injury will be even greater than in 1912, when it caused many millions of dollars' damage. It is of greatest importance, the department's specialists say, that farmers properly handle their fields this fall and next spring to prevent a repetition of the enormous losses occasioned in 1912. Injury can be reduced to a minimum by adopting the following practices:

In the sections above mentioned the important economic species have a three-year life cycle; that is, beetles appearing in the spring of 1914 deposit eggs which hatch about a month after being laid. The young grubs feed on roots and decaying matter, but seldom do damage during their first year. However, the following year (1915 in the case of the destructive brood under discussion) they are larger and feed almost entirely on living roots, preferably corn, timothy, potatoes, strawberries, etc., causing great loss when abundant. The following spring (1916) they feed more or less, but by June 1 or shortly thereafter they make earthen cells, become semidormant, and in a fortnight or longer change to brown pupæ, and a month later to adult beetles, in which condition they remain in the soil until the next spring (1917).

The beetles lay their eggs in land covered with vegetation at the time of their flights (May and June), consequently land in small grain, timothy, and such crops which cover the ground, as well as land overgrown with weeds at that time, are most likely to be infested the following year. It is also noticeable that ground nearest timber will be heaviest infested, other conditions being equal, since the parent beetles feed on tree foliage and do not fly great distances if they can find suitable places to lay their eggs near by.

METHODS OF PREVENTING THE PEST.

Fields likely to be infested with grubs should be thoroughly plowed between September 15 and October 10. The date of plowing will depend on latitude and the weather conditions, for the grubs go down as cold weather approaches and it is desirable to plow the fields just before they go down when possible. If the grubs are abundant, hogs should be allowed to run in the field wherever this can be done; chickens and turkeys are also valuable aids if allowed the run of newly-plowed ground. If it is impracticable to make use of hogs to rid the infested fields of grubs, a deep and thorough disking should follow the plowing, and in 1915 only crops least susceptible to injury, such as small grains, buckwheat, clover, vetch, etc., should be planted, and by no means should susceptible crops, such as corn, timothy, and potatoes be planted. While fall plowing should be practiced and is of great value for destroying grubs, nevertheless it can not be depended upon solely to eradicate grubs. Cornfields which were kept cultivated and free from an undergrowth of weeds in May and June of 1914 may, with reasonable safety, be planted to corn or potatoes in 1915, although it is advisable to inspect the field first for grubs. While it is not ordinarily advisable to

follow corn after corn, nevertheless it is important at this time, in those sections where the grub will be abundant, to adopt this rotation for the coming year, even though it may become necessary to assist the second successive corn crop with artificial fertilizer.

Proper precautions and planning of rotations for next year at this time will save many thousands of dollars in crops which otherwise would almost certainly be destroyed by the grubs. The reader is referred to Farmers' Bulletin No. 543, of this department, for further particulars on the white grub.

CURING MEAT ON THE FARM.

USEFUL RECIPES FOR THE ECONOMICAL AND SATISFACTORY PRESERVATION OF BEEF AND PORK.

The best way to eat meat is to eat it while fresh, for there is no way of preserving it that will retain all the nutrition and all the flavor. It is, nevertheless, frequently desirable to cure meat at home, and there is no reason why this can not be done satisfactorily and economically. Salt, sugar or molasses, baking soda, and a little saltpeter are the only ingredients necessary.

Ordinarily the curing of meat should be begun from 24 to 36 hours after the animal is slaughtered. This allows sufficient time for the animal heat to leave the meat entirely, but not sufficient to permit decay to set in. Once the meat is tainted, no amount of preservatives will bring back its proper flavor. On the other hand, if salt is applied too soon, obnoxious gases will be retained and the meat will possess an offensive odor. It is also impossible to obtain good results when the meat is frozen.

Three useful recipes for popular forms of cured meat are given below. The only equipment necessary for them are the ingredients already mentioned and a clean hardwood barrel, or a large stone jar or crock. In considering these recipes it is well to remember that, on the whole, brine-cured meats are best for farm use. They are less trouble to prepare and the brine affords better protection against insects and vermin. A cool, moist cellar is the best place for brine curing. The cellar should be dark and tight enough to prevent flies and vermin.

RECIPES FOR CURING.

Corned beef.—The pieces commonly used for corning are the plate, rump, cross ribs, and brisket, or, in other words, the cheaper cuts of meat. The loin, ribs, and other fancy cuts are more often used fresh, and since there is more or less waste of nutrients in corning, this is well. The pieces for corning should be cut into convenient-sized joints, say 5 or 6 inches square. It should be the aim to cut them all about the same thickness, so that they will make an even layer in the barrel.

Meat from fat animals makes choicer corned beef than that from poor animals. When the meat is thoroughly cooled it should be corned as soon as possible, as any decay in the meat is likely to spoil the brine during the corning process. Under no circumstances should the meat be brined while it is frozen. Weigh out the meat and allow 8 pounds of salt to each 100 pounds; sprinkle a layer of salt one-quarter of an inch in depth over the bottom of the barrel; pack in as closely as possible the cuts of meat, making a layer 5 or 6 inches in thickness; then put on a layer of salt, following that with another layer of meat; repeat until the meat and salt have all been packed in the barrel, care being used to reserve salt enough for a good layer over the top. After the package has stood over night add, for every 100 pounds of meat, 4 pounds of sugar, 2 ounces of baking soda, and 4 ounces of saltpeter dissolved in a gallon of tepid water. Three gallons more of water should be sufficient to cover this quantity. In case more or less than 100 pounds of meat is to be corned, make the brine in the proportion given. A loose board cover, weighted down with a heavy stone or piece of iron, should be put on the meat to keep all of it under the brine. In case any should project, rust would start and the brine would spoil in a short time.

It is not necessary to boil the brine except in warm weather. If the meat has been corned during the winter and must be kept into the summer season, it would be well to watch the brine closely during the spring, as it is more likely to spoil at that time than at any other season. If the brine appears to be ropy or does not drip freely from the finger when immersed and lifted, it should be turned off and new brine added, after carefully washing the meat. The sugar or molasses in the brine has a tendency to ferment, and, unless the brine is kept in a cool place, there is sometimes trouble from this source. The meat should be kept in the brine 28 to 40 days to secure thorough corning.

Dried beef.—The round is commonly used for dried beef, the inside of the thigh being considered the choicest piece, as it is slightly more tender than the outside of the round. The round should be cut lengthwise of the grain of the meat in preparing for dried beef, so that the muscle fibers may be cut crosswise when the dried beef is sliced for table use. A tight jar or cask is necessary for curing. The process is as follows: To each 100 pounds of meat weigh out 5 pounds of salt, 3 pounds of granulated sugar, and 2 ounces of saltpeter; mix thoroughly together. Rub the meat on all surfaces with a third of the mixture and pack it in the jar as tightly as possible. Allow it to remain three days, when it should be removed and rubbed again with another third of the mixture. In repacking put at the bottom the pieces that were on top the first time.

Let stand for three days, when they should be removed and rubbed with the remaining third of the mixture and allowed to stand for three days more. The meat is then ready to be removed from the pickle. The liquid forming in the jars should not be removed, but the meat should be repacked in the liquid each time. After being removed from the pickle the meat should be smoked and hung in a dry attic or near the kitchen fire where the water will evaporate from it. It may be used at any time after smoking, although the longer it hangs in the dry atmosphere the drier it will get. The drier the climate, in general, the more easily meats can be dried. In arid regions good dried meat can be made by exposing it fresh to the air, with protection from flies.

Plain salt pork.—Rub each piece of meat with fine common salt and pack closely in a barrel. Let stand over night. The next day weigh out 10 pounds of salt and 2 ounces of saltpeter to each 100 pounds of meat and dissolve in 4 gallons of boiling water. Pour this brine over the meat when cold, cover, and weight down to keep it under the brine. Meat will pack best if cut into pieces about 6 inches square. The pork should be kept in the brine till used.

Sugar-cured hams and bacon.—When the meat is cooled, rub each piece with salt and allow it to drain over night. Then pack it in a barrel with the hams and shoulders in the bottom, using the strips of bacon to fill in between or to put on top. Weigh out for each 100 pounds of meat 8 pounds of salt, 2 pounds of brown sugar, and 2 ounces of saltpeter. Dissolve all in 4 gallons of water, and cover the meat with the brine. For summer use it will be safest to boil the brine before using. In that case it should be thoroughly cooled before it is used. For winter curing it is not necessary to boil the brine. Bacon strips should remain in this brine four to six weeks; hams six to eight weeks. This is a standard recipe and has given the best of satisfaction. Hams and bacon cured in the spring will keep right through the summer after they are smoked. The meat will be sweet and palatable if it is properly smoked, and the flavor will be good.

METHODS OF CALCULATING SIZE AND COST OF HOME-MADE SILOS.

Methods of calculating the proper size and cost of silos are given in a recently issued Farmers' Bulletin (No. 589), "Home-made Silos." The bulletin, which may be had free on application to the department, consists of 47 pages, with 37 figures and diagrams, and gives explicit directions for the home construction of concrete, stave, and modified Wisconsin silos.

The concrete silo, says the bulletin, has the advantage of the other two in permanency and stability. A well-constructed concrete silo will last indefinitely; there is no danger of its blowing or burning down, rotting out, or being attacked by vermin. Little attention is required to keep the structure in good condition. The chief objection to the concrete silo is its cost.

COST OF SILOS.

Recent data on the cost of home-made silos collected by the Dairy Division from all parts of the country show the following relative cost of the three types:

Type of silo.	Number of silos.	Average capacity.	Average cost.	Average cost per ton capacity.
Concrete:		*Tons.*		
100 tons or less	71	71	$220.47	$3.10
101 to 200 tons	50	135	348.68	2.59
More than 200 tons	23	219	446.42	2.04
Total concrete	144	117	301.08	2.58
Modified Wisconsin	8	116	185.52	1.61
Stave:				
100 tons or less	25	63	118.40	1.87
Over 100 tons	16	129	187.46	1.45
Total stave	41	89	145.35	1.63

The following table will show the proper diameter of the silo for herds of different sizes to be fed different amounts for winter feeding, when 2 inches of silage are removed daily:

Relation of size of herd to diameter of silo for winter feeding (on basis of 40 pounds of silage per cubic foot).

Inside diameter of silo.	Quantity of silage in depth of 2 inches.	Number of animals that may be fed, allowing—			
		40 pounds per head.	30 pounds per head.	20 pounds per head.	15 pounds per head.
Feet.	*Pounds.*				
10	524	13	17	26	35
11	634	16	21	31	42
12	754	19	25	37	50
13	885	22	29	44	59
14	1,026	25	34	51	68
15	1,178	29	39	59	78
16	1,340	33	44	67	89
17	1,513	38	50	75	101
18	1,696	42	56	85	113
20	2,094	52	70	104	139

A 900-pound cow will ordinarily consume 30 pounds of silage a day; a 1,200-pound cow about 40 pounds. Yearlings will eat about one-half as much as mature animals; fattening cattle, 25 to 35 pounds for each 1,000 pounds live weight. A sheep will take about one-eighth as much as a cow. Horses should be limited to 15 to 20 pounds daily.

In general, the depth of the silo should not be less than twice nor more than three times the diameter. The greater the depth the better the silage, on account of the pressure from above. If less than 24 feet in height the quality of silage will not be the best. A very great height, however, is to be avoided on account of the excessive amount of power required to elevate the cut corn into the silo.

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Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

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NOS. 1 AND 2 OF NEWS LETTER TO BE REPRINTED.

For the convenience of those who are keeping files of the Weekly News Letter, it has been determined to reprint a limited edition of Nos. 1 and 2, Volume I, in the present size and form. These numbers originally were issued in typewritten form, not uniform in type or size for binding with the subsequent issues. The reprints of Nos. 1 and 2 will not be generally distributed, and will be supplied only to those who apply for them. Those desiring them for the purpose mentioned should address a post card to the Editor and Chief, Division of Publications, United States Department of Agriculture, Washington. D. C.

CRIMSON CLOVER AND HAIRY VETCH SEED PRICES.

Prices for imported crimson clover and hairy vetch seed have recently shown such a marked upward tendency that specialists of the Department fear that the cost of these seed, of which Europe is the chief source, will interfere with the increasing use of these leguminous cover crops. In fact, it is feared that the prices of the seed of these legumes may go so high as to make it inadvisable to plant them this year.

Before the present European conditions arose, crimson clover seed was selling at from $4 to $5 per bushel. Up to August 15 there was a scarcity of this seed in the United States, owing to the fact that the receipts from Europe were smaller than usual. The prices then advanced to from $7.50 to $9 per bushel. Since that date importations have continued to arrive, until there is now more imported seed available for fall seeding than there was in this country a year ago at this time. This seed, according to the Department's information, was all imported at approximately the same price as that sold for $4 to $4.50 per bushel in the early part of the season. The present high price, therefore, is regarded by the Department as unwarranted, from the standpoint of the supply and the import price of the seed. Some dealers are continuing to sell at the former price, but these are exceptions.

If the present high price is maintained, the specialists are doubtful whether crimson clover can be profitably used as a green manure crop for seeding in corn or on vacant ground, or under other conditions where the catch is not reasonably certain. Under such conditions they point out that it will be better practice to sow rye this fall and use the difference in price in adding nitrogen to the soil in the form of nitrate of soda or some other highly nitrogenous fertilizer. The rye will afford a winter cover preventing washing and leaching, and can be plowed under in the spring to add humus to the soil.

When crimson clover is being used regularly as a winter cover crop in orchard culture, or where local experience indicates that a good catch and a good crop are practically certain, a higher price for the seed will no doubt be justified.

A somewhat similar condition exists with reference to hairy vetch seed. There has been approximately six-sevenths as much seed imported since November 1, 1913, as in the year previous. This shortage, however, is partly counterbalanced by the increasing domestic production of hairy vetch seed. Wherever the price of hairy vetch seed is found to be exorbitant, the same change in farm practice is recommended as that suggested in the case of crimson clover.

HOW THE FARMER CAN USE THE FACILITIES OF THE U. S. DEPARTMENT OF AGRICULTURE.

Office of Corn Investigations.

(*Continued from Vol. 2, No. 2.*)

The Office of Corn Investigations, a branch of the Bureau of Plant Industry, is endeavoring to find out how corn growers may produce larger yields per acre, of better quality and with less labor. This office investigates the fundamental principles which apply wherever corn is grown, such as the principles of corn breeding, seed corn preservation, and corn culture.

Members of this office cooperate with interested farmers on their farms in endeavoring to get better yields. Both the corn specialists and the farmer benefit from this arrangement. These specialists first take great care to investigate particular conditions in a community that they may know exactly what methods and breeds of corn may be used most profitably there.

The office is always on the lookout for foreign varieties of corn which seem to have unusual and valuable characteristics that might be of value in this country. These varieties are tested with well selected and local varieties to determine their relative values. Systematic breeding work is then taken up with such domestic and foreign varieties as seem most useful to

the American farmer to improve each variety still further. Comparative tests are repeated from time to time to determine whether the variety under the process of improvement is actually increasing in superiority.

Some high-yielding varieties have been originated by crossbreeding; some have descended from foreign introductions possessing special characters, and some have resulted from ear-to-row selection work. Some of these are being taken up by seedsmen and given trade names, some are known by local names, and others are generally known by their breeding number. Among the latter are United States selections 77, 119, 120, 133, 136, 160, 165, and First Generation Cross 182. Some of these have been made sufficiently productive to outyield local strains through out several states. First Generation Cross 182 did this throughout Virginia and Maryland. United States Selection 133, improved in southern Wisconsin, has won favor at points in Michigan and Pennsylvania and is in great demand in Vermont and New York as an ensilage corn.

To establish the practice of corn improvement is of much more value to a community than the mere introduction of a variety which has been improved. The office by systematic research has endeavored to work out practical methods for growing corn and to make them available for communities desiring to try them. For example, it has demonstrated the profitableness of the construction of a seed-corn house, and on application a farmer may obtain from the office suggestions about building such a house.

Seed for tests or for corn breeding can frequently be supplied to farmers if requested in the summer or autumn, so that the seed may be properly selected and dried. Requests should state when and where the corn is to be planted and the date on which it is desired to have it ripen. Corn planting begins during February in the South and continues through May in the North. During this time the specialists familiar with hundreds of varieties and how they grow and yield under different conditions go from point to point planting experimental and breeding plats. *Therefore requests for cooperative work and seed corn should be sent in before February.*

In the Office of Corn Investigations the results of 15 years' experiments are classified and filed and the information gained is avaliable for any farmer who raises corn. The boys on the farm who have organized into corn clubs for the production of superior varieties are assisted in their corn-breeding work by agents of the office. The tabulated information of the office is also at their disposal.

The office aims to increase the acre yield of corn in the United States. The present acre yield of 27 bushels must be improved to meet the growing demand for corn on the part of our increasing population. Actual results obtained by boy members of corn clubs throughout the country have demonstrated that by using improved varieties and methods the acre yield may be greatly increased over the present general average. A more universal use of the methods employed by these successful young farmers will help solve at least one of our agricultural problems, viz, how to increase the acre yield of corn with our increase of population.

RAILROADS VIOLATE 28-HOUR LAW.

For the confinement of cattle for more than 28 hours without unloading for feed, water, and rest 37 prosecutions have been reported to the Bureau of Animal Industry of the department during the month of June. The fines for these total nearly $5,000. The railroads who were the defendants in the prosecutions and the fines which were imposed on them are as follows:

Number of cases.	Defendant.	Fine.
6	Chicago, Rock Island & Pacific Ry. Co	$712.90
4	Mobile & Ohio R. R. Co	460.20
1	Chesapeake & Ohio Ry. Co	118.50
2	Chicago & Alton R. R. Co	235.60
12	Atchison, Topeka & Santa Fe Ry. Co	1,859.60
3	Kansas City, Mexico & Orient Ry. Co	352.50
1	Northern Pacific Ry. Co	204.00
1	Chicago & North Western Ry. Co	215.11
1	Cleveland, Cincinnati, Chicago & St. Louis Ry. Co	113.61
1	St. Louis & San Francisco R. R. Co	116.70
2	Louisville & Nashville R. R. Co	227.16
1	Chicago Great Western R. R. Co	120.80
1	Iowa Central R. R. Co	119.40
1	Missouri Pacific Ry. Co	115.90
37	Total	4,972.07

INCREASE IN FARM PRICES OF MEAT ANIMALS.

The prices paid to producers of meat animals in the United States advanced 3 per cent during the month from July 15 to August 15. This compares with an average advance from July 15 to August 15 in the past four years of 0.8 per cent.

On August 15 the price to producers of the United States for meat animals—beef cattle, calves, hogs, sheep, lambs, and chickens—averaged $7.63, which compares with $7.20, the average on August 15 a year ago, $6.56 two years ago, $5.87 three years ago, and $6.67 four years ago.

The averages for the United States of prices paid to producers of live stock on dates indicated were as follows:

Item.	August 15—				July 15, 1914
	1914	1913	1912	1911	
Hogs ... 100 pounds	$8.11	$7.79	$7.11	$6.54	$7.72
Beef cattle ... do	6.47	5.91	5.37	4.39	6.38
Veal calves ... do	8.08	7.53	6.62	5.93	7.80
Sheep ... do	4.87	4.32	4.26	3.98	4.75
Lambs ... do	6.23	5.50	5.60	5.25	6.55
Chickens ... do	13.10	12.80	.....	.....	13.40
Wool ... do	18.70	15.80	18.80	16.00	18.50
Horses ... each	135.20	140.70	142.00	140.80	137.00
Milch cows ... do	60.70	54.80	46.10	42.30	59.70

It will be observed that during the past four years there has been a steady advance in price of each class of meat animals and of milch cows. Horses, on the other hand, have been declining moderately in prices.

HOW THE FARMER'S DAUGHTER MAY EARN PIN MONEY.

A lady in Richmond, Va., has made a national reputation putting up and selling "pin-money pickles." She began a few years ago in a very modest way, but now her products are so popular that they can be found nearly everywhere in the United States. Another woman, in Washington, D. C., has built up a business making chowchow, for which she gets $3 a gallon.

These are only samples of what hundreds of young women have done to earn pin money by putting up canned goods at home. People are continually demanding a better quality of canned goods and are willing to pay a better price for them. The farmer's daughter who desires to earn pin money may avail herself of this demand and with care and perseverance learn to put up canned goods that she may sell at a profit. Those who are interested in such a project may obtain detailed instructions on canning in Farmers' Bulletin 521 of the United States Department of Agriculture, which will be sent free of charge to the applicant.

The bulletin, while encouraging the young woman in her efforts to make a business proposition of putting up fruits and vegetables, cautions against overenthusiasm. It advises that the beginner experiment with a few cans before going too heavily into the project. If the first cans keep well, she may be encouraged to proceed. If she meets with a few failures, perhaps she has overlooked some important detail outlined in the department's bulletin. It is only through failures that one gets good experience, and with a little practice and care in following the directions any farmer's daughter should be able to put up a satisfactory can of fruit or vegetables.

When a young woman has succeeded in putting up a product satisfactory for home use, she may well look around for a market outside the home. The girl who starts out with confidence in herself will be more likely to find a good market than one who is diffident.

SPECIALIZE IN WHAT YOU DO BEST.

The girl with experience in canning knows the products with which she has the most success, and should endeavor to sell only those in which she excels. It is always best to specialize and work up a reputation for some particular kind of goods, as did the women already mentioned. One girl may make a feature of catchup, another may find her best product is pickles, while another may put up a specially attractive can of peppers, cauliflower, peaches, apples, or tomatoes.

People of means are most likely to want "home-canned" products, and these are the ones to see. Many housewives living in the cities who leave home for the country during the summer months will gladly give the farmer's daughter an order to can enough tomatoes to last them all winter. It is best to take orders ahead as far as possible.

The young woman who starts out to sell her products will, of course, dress neatly and take samples of her products put up in an attractive form. Glass jars will show products much better than tins, but if tins are found to be less expensive, they may be used for all except the show products.

The managers of the best hotels and restaurants in the neighborhood, the stewards of social clubs in the cities, the managers of railroad dining cars, and many retail grocers will be glad to use the products of the girl who does her canning at home. These products are likely to show individual care and to be prepared neatly of good materials, and on the shelves of a retail store are likely to attract attention from the best customers.

If a young woman knows by experience that her products are first class, she need not hesitate to put a good price on them. Home-canned goods, canned by experienced people, are worth more than ordinary goods, and one need not compete with the other. "Fancy goods" are rarely found upon bargain counters. Even if the first samples of home canning are not such as may be readily sold, they may be used at home and from her experience the farmer's daughter may do better the following season. When she actually succeeds in getting something better than the ordinary she should be able to sell it. She may well ask her friends to recommend her to good trade. The young woman sincerely determined to make a success of canning as a business proposition with perseverance and care in following instructions should be sure of some measure of success.

DRY-FARMING EXPOSITION AT WICHITA, KANS.

October 7 to 17 the Ninth International Dry-Farming Congress and International Soil-Products Exposition will be held at Wichita, Kans. The exposition will offer three classes in competition—one for products grown where the rainfall is 23 inches or less annually, one where the rainfall exceeds 23 inches, and one where the products are grown under irrigation.

Under authority from Congress the Department of Agriculture will participate in this exposition and has been allotted 8,000 square feet of floor space. The Office of Exhibits is selecting and preparing material from the several bureaus and offices of the department for this exposition and the Secretary has invited a number of State experiment stations in the subhumid region to cooperate with the department in the Government exhibit.

REPELLENTS FOR PROTECTING ANIMALS FROM THE ATTACKS OF FLIES.

The results of tests with various substances designed to keep flies from annoying cattle, horses, and mules, are shortly to be published by the department. In these tests, the specialists of the department found that there were substances which, if applied to animals, would keep the biting flies, such as the stable fly and horse fly, the bot fly, and the screw worm fly, away from the animal for from one to four days. They also tested a number of substances to be used on wounds to prevent the screw worm fly from depositing its eggs, and the housefly from interfering with the wound and possibly infecting it.

Various kinds of flies tend to injure cattle by weakening them and reducing their milk supply. It is fairly well established that the stable fly does considerable damage, especially in northern Texas, where it was found that they killed stock directly, made cattle more subject to the recurrence of Texas fever, and reduced milk supply, causing a loss estimated at over $25,000 in a single year. The test experiments with dairy cows seem to indicate that the effect of flies on milk is not of great economic importance, although evidence seems to show that animals protected from flies feed better and are generally in better condition. Reduction in milk, some authorities believe, is due as much to the fact that cows do not graze as freely in the hot sun in summer as at other seasons.

In general, the conclusions are that many of the substances, such as pyrethrum powder, camphor, citronella, and sassafras, while temporary repellents, lose their effectiveness very shortly. Ten per cent solutions of the liquids in cottonseed oil, therefore, commonly have to be applied daily.

Various oils, emulsions of oils, and mixtures of oils are used in repelling flies. Crude petroleum, cottonseed oil, fish or train oil, and light coal-tar oil may be used pure.

Jensen (1909) recommends the following formula, which is said to protect cows for a week:

Common laundry soap	1 pound.
Water	4 gallons.
Crude petroleum	1 gallon.
Powdered naphthalin	4 ounces.

Cut the soap into thin shavings and dissolve in water by the aid of heat; dissolve the naphthalin in the crude oil, mix the two solutions, put them into an old dasher churn, and mix thoroughly for 15 minutes. The mixture should be applied once or twice a week with a brush. It must be stirred well before being used.

Fish oil is rated as one of the best repellents and has been used alone and in combination with various other substances. Other substances that have repellent qualities and that have been used in various mixtures are pine tar, oil of tar, crude carbolic acid, oil of pennyroyal, and kerosene. The protective action of fish oil is stated to range from less than two days (Parrott, 1900) to six days. Moore's formula is said to protect for two days. This mixture is safe when applied lightly with a brush, but not when applied liberally with a pail spray pump. The formula is as follows:

Fish oil	100 parts.
Oil of tar	50 parts.
Crude carbolic acid	1 part.

Laurel oil is a very effective repellent. Mayer (1911) found that the protection lasted from 2 to 12 days. The oil when used pure has an irritating effect unless it is applied lightly. According to Mayer the irritating effect may be overcome by combining it with linseed oil in the proportion of 1 to 10. In the experiments of the Department of Agriculture, it was found that 10 per cent of laurel oil in cottonseed oil was active for less than a day.

A number of formulas for repellents for application to wounds have been recommended by various authors.

In experimental tests carried out by the department the following results were obtained:

A 10 per cent mixture of crude carbolic acid (21.8 per cent phenols) in cottonseed oil has a very strong repellent action on flies, but this lasts less than a day, in consequence of which it is necessary to apply the mixture every day. The mixture should be applied lightly with a brush, since a heavy application with a spray pump is likely to cause phenol poisoning.

Mixtures consisting of 10, 20, and 50 per cent of pine tar in cottonseed oil have marked repellent qualities. They should be applied lightly and it is necessary to apply them every day. A liberal application of a 10 per cent mixture is deleterious to animals. This is also the case with a half-and-half mixture of pine tar and Beaumont oil when applied lightly with a brush.

A mixture of oil of tar (14 per cent phenols, volatile with steam) in cottonseed oil and in Beaumont oil has a very marked repellent action. A 10 per cent mixture of oil of tar in cottonseed oil is safe. A half-and-half mixture of oil of tar and cottonseed oil when applied liberally with a spray pump and 50 per cent oil of tar in Beaumont oil applied with a brush are not safe; 10 per cent oil of tar in Beaumont oil is safe. When applied lightly it is necessary to apply 10 per cent oil of tar in cottonseed oil or 10 per cent oil of tar in Beaumont oil every day.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1914

Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

VOL. II WASHINGTON, D. C., SEPTEMBER 16, 1914 No. 6

WARNING AGAINST CHEAP LOAN SCHEME.

Some one recently remarked that it was astonishing how hard some men were willing to work in order to make a dishonest living. The field of rural credit is already producing a number of examples. Certain companies are actively at work promising farmers cheaper money than anybody else is able to get on equally good security. The eagerness with which some are accepting the bait is one indication of the need there is for a sound system of rural credit. It is not wholly the fault of the farmer who is taken in. A great deal of mental energy, combined with marvelous skill, is expended in preparing soul-compelling circulars which seem to promise the farmer everything, but really promise him nothing. If as much thought and skill were exercised in trying to convert sinners, we should be very near the millennium.

Stripped of verbiage and words which darken rather than enlighten, the scheme is essentially as follows: Such a company offers to lend you money on good security at, say, 3 per cent interest, and to allow you to repay the loan in easy monthly installments on the amortization plan. This sounds alluring, and, if you are not too persistent in asking what you are to get and *when you are to get it,* you sign an application for a loan on these favorable terms. In a few days you receive from such a company a contract for the loan for which you applied. The contract which you receive is duly signed by the officers of the company. Then you realize that the application signed by you and the contract signed by the officers of the company together constitute a valid contract, and that you are now in for it.

Under the terms of the contract you are to begin at once paying off the debt of, say, $1,000 at the rate of $10 a month, but you have not got your $1,000 yet. Moreover, you do not know just when you will get it. The only thing you know is that you have got to go right on paying $10 a month. You have, however, the promise that whenever the company has the money to spare, you will get your loan. Another way of saying the same things is that when your turn comes, you will get it. This means that such a company has not got the money now, and that there are several other gentlemen whose turns come before yours. As fast as the company gets money it lends it out to these men each in his turn. When your turn comes, if the company lasts that long, you will get your money.

Now, where does this kind of company get the money which it is going to lend to you and the other gentlemen who have signed these contracts? Why, it gets it from you and those same gentlemen, and from no one else. Speaking to all of you collectively, it says, in effect, "Gentlemen, this company has no money of its own, but if you will pay your money into its treasury, we will then be glad to lend it back to you, if you will give good security, on very favorable terms, indeed."

If such a company ceased getting new contracts, it could not lend you your thousand dollars until you had paid in a thousand. It has no other source of income, and it can not create something out of nothing. If it continues to get new contracts after yours, then it can take the money paid in by those who follow you to lend to those who precede you. In this way your turn may come before you have paid in quite the full amount which you expect to borrow. But those who follow you will have to wait still longer on that account. If new applicants should sign up rapidly and in large numbers, and begin paying their good money into the company, the company may then be able to give you your loan tolerably early. But that only postpones the evil day. Those who follow you in such numbers, will have to wait longer and longer, unless the applicants should continue increasing in a geometrical ratio. But the longer this sort of thing goes on the greater will be the smash when it comes.

Unless you have been initiated into the mysteries of geometrical progression you may imagine that this sort of thing can go on indefinitely; but if you will take your lead pencil and figure awhile you will find that in order that you may get your loan within a year there must be about 10 times as many applicants next year as there were this. In order that they may get their loans within a year, there must be 10 times as many applicants the following year as next year, and so on indefinitely. Now, if there are 1,000 applicants waiting for loans this year, in 10 years there would have to be, at this rate, 10,000,000,000,000 new contracts in the tenth year. This is nearly seven thousand times the present population of the earth.

But if you and all the applicants are willing to wait five years for your loans it would only take 1,024,000 new contracts in the tenth year to keep the company going. By the thirteenth year there would have to be 8,192,000 new applications. There are about 6,500,000 farms in the United States. If there were several companies like this operating on our farmers, you can see that the competition among them would, by that time, become what might be called severe.

But why mince matters? Everyone who has ever studied the question knows perfectly well that this sort of business is foredoomed to failure. There are only two possible conditions under which it can possibly last, and both these conditions assume a degree of foolishness on the part of the American farmer of which even his worst enemy would not accuse him. One is that he will be willing, in considerable numbers, to continue paying his monthly installments into the treasury of the company until he has actually paid in as much as he expects to borrow back. A savings bank would be better, because it will allow him interest on what he pays in, and when he draws out what he has paid in, he does not have to pay any interest, not even 3 per cent. The other is that so many of those who begin paying in their monthly installments will get tired of their bargain and quit, as to enable the company to take their money and make loans to the few who stick to it. If 9 out of every 10 who pay in money stop before they get their loans, the company may then make its loans within a reasonable time to the troublesome one who sticks to them. Under no other condition whatever can such a company last many years. One can predict its failure with the same certainty that one can predict the death of a human being. In neither case can one predict the day and hour, but that the event itself will occur within a namable period is absolutely certain.

If, instead of paying $10 a month into the treasury of one of these companies, one were to deposit $10 a month in a savings bank, which would allow him interest month by month on all his deposits, the following table shows what he would have to his credit at the end of each year. The first column shows what he would have to his credit in a savings bank that allowed him 3 per cent; the second column shows what he would have to his credit in a savings bank that allowed him 4 per cent. It will be noticed that in either case, by the end of the fourth year, he would have to his credit more than $500.

End of—	3 per cent.	4 per cent.	End of—	3 per cent.	4 per cent.
First year	$121.95	$122.60	Seventh year	$934.44	$968.32
Second year	247.56	250.10	Eighth year	1,084.42	1,129.65
Third year	376.94	382.70	Ninth year	1,238.90	1,297.44
Fourth year	510.20	520.61	Tenth year	1,398.02	1,471.94
Fifth year	647.46	664.03	Eleventh year	1,561.92	1,653.42
Sixth year	788.83	813.19			

AUTUMN THE BEST TIME TO SELECT SEED CORN.

Autumn is the time to prepare for a profitable corn crop the following season. At this time the seed is most abundant, and the very best can be obtained before it has been in any way reduced in vitality. Many let the opportunity pass, expecting to purchase their seed corn in the spring, but the department's specialist in charge of corn investigations advises that the autumn is the best time to select good seed.

The best place for the farmer to obtain seed corn is from fields on his own farm, or in his neighborhood, that were planted with a variety which has generally proved most successful in that locality. Of course, if a community has an experienced and honest corn breeder on whom it may rely, the seed corn may be obtained from him.

The corn breeder who has demonstrated year after year the superiority of his corn will demand a special price for his superior seed. Such corn breeders are improving corn as cattle breeders have improved cattle. He has used special methods that farmers generally have not time to apply. Five dollars a bushel is not too much to pay and will be a profitable bargain for both parties.

WHAT CONSTITUTES GOOD SEED CORN.

By far too many consider seed good simply because it will grow. To be first class, seed must be—

(1) Well adapted to the seasonal and soil conditions where it is to be planted.

(2) Grown on productive plants of a productive variety.

(3) Well matured, and preserved from ripening time till planting time in a manner that will retain its full vigor.

The importance of the three requirements just enumerated has been demonstrated experimentally by the department's Office of Corn Investigations. The results given briefly, as enumerated, are as follows:

(1) For a series of five years, 12 well-bred varieties were tested in 10 northern States, equivalent lots of seed being used in each State. Varieties that produced most in some States were among the poorest in others.

(2) Seed ears taken from the highest yielding rows of ear-to-row breeding plats have repeatedly produced better than seed ears taken from poorer yielding rows. Seed ears from the best producing stalks found in a general field produced more than seed ears taken without considering the productiveness of the parent stalks.

(3) Four bushels of ears were divided into two equal parts, one part being well taken care of and the other placed in a barn as corn is ordinarily cribbed. The well-preserved seed gave a yield on poor soil 12 per cent higher than the poorly preserved and 27 per cent higher on fertile soil, notwithstanding the fact that both lots of seed germinated equally well.

SEED CORN GATHERING SHOULD BE SPECIAL TASK.

At corn-ripening time drop all other business and select an abundance of seed corn. The process is too important to be conducted incidentally while husking. When selecting seed corn, give the process your entire attention. Get the very best that is to be had and preserve it well, and your increased yields will return you more profit than any other work you can do on your farm.

The only proper way to select seed corn is from the stalks standing where they grew as soon as ripe and before the first hard freeze.

As soon as the crop ripens go through the field with seed-picking bags and husk the ears from the stalks that have produced the most corn without having any special advantages, such as space, moisture, or

fertility. Avoid the large ears on stalks standing singly with an unusual amount of space around them. Preference should be given the plants that have produced most heavily in competiton with a full stand of less productive plants.

In all localities the inherent tendency of the plant to produce heavily of sound, dry, shelled corn is of most importance.

Late-maturing plants with ears which are heavy because of an excessive amount of sap should be ignored. Sappiness greatly increases the weight and is likely to destroy the quality. In many sections this fact is not sufficiently appreciated.

In the Central and Southern States, all other things being equal, short, thick stalks are preferable. Short stalks are not so easily blown down and permit thicker planting. Thick stalks are not so easily broken down and in general are more productive than slender ones.

The tendency for corn to produce suckers is hereditary. Other things being equal, seed should be taken from stalks that have no suckers.

The same day seed corn is gathered the husked ears should be put in a dry place where there is free circulation of air, and placed in such a manner that the ears do not touch each other. Good seed is often ruined because it is thought dry enough when gathered and the precaution mentioned is considered unnecessary. Many farmers believe that their autumns are so dry that such care is superfluous. Seed corn in every locality gathered at ripening time will be benefited by drying as suggested. If left in the husk long after ripening, it may sprout or mildew during warm, wet weather or become infested with weevils.

The vitality of seed is often reduced by leaving it in a sack or in a pile for even a day after gathering. During warm weather, with some moisture in the cobs and kernels, the ears heat or mildew in a remarkably short time.

The Department of Agriculture has a bulletin that gives in detail the best manner of treatment for corn after it is gathered. The bulletin also describes how seed corn should be stored during the winter and tests of the germination of seed corn. The bulletin may be had free by those who request Farmers' Bulletin No. 415, on Seed Corn, from the department's Division of Publications, Washington D. C.

HOW THE FARMER MAY USE THE FACILITIES OF THE U. S. DEPARTMENT OF AGRICULTURE.

(Continued from Vol. II, No. 5.)

Office of Grain Standardization.

The department's Bureau of Plant Industry has one office which is taken up with the subject of grain standardization, and the purpose of its investigations may be grouped under three heads, as follows:

(1) To improve the methods of harvesting, handling, storing, and transporting of grain so that it will be of a better grade when it reaches the consumer or the primary market.

(2) To establish definite standards for the grading of commercial grain on such a basis that will enable the producer and consumer, as well as the dealer, to determine the correct grade of any given lot of grain.

(3) Through a definite system of grading, uniform throughout the United States, to encourage the production and marketing of grain of better quality.

In these investigations a study is made of all factors entering into and affecting the commercial grade of corn, wheat, oats, barley, rye, rice, flaxseed, Kafir, etc., from the time of harvesting until delivered to the consumer.

Tests are made to determine the changes which take place in grain during storage on the farm or in elevators or warehouses at country stations and terminal markets. This same work is also extended to grain in transit in cars and in trans-Atlantic steamships with the view of reducing the enormous losses now resulting from the heating and spoiling of large quantities of grain before it is finally disposed of, in that losses of this character are finally charged back to the farmer in the lower price he receives for his grain.

Tests are made to determine the rate and degree of damage in the various grades of commercial grain, and in the farm studies special consideration has been given to such problems as the loss in weight of corn from the time of cribbing until it is marketed. Emphasis is placed on methods which enable the producer, by marketing dry, sound, and clean grain, to demand a premium for such grain, as well as the high commercial grade to which he is entitled.

At the country elevator a study is made of the quality and condition of grain as received from the farmer, followed by investigations as to methods of handling through the elevator, including cleaning, drying, preparation for shipment, and loading into cars. Information is given as to such methods and practices as will prevent deterioration and consequent lowering of grade when it shall reach the terminal market. Examinations are made of samples submitted as to quality and condition, including moisture test, and reports are issued to the submitter which enable him to know the grade to which he is entitled on his grain. Information is furnished relative to natural shrinkage of grain in transit; influence on grade of temperature and season, moisture content, and soundness; quality and condition of American export grain under varying conditions of stowage, length of voyage, etc.; the quality and condition of grain imported into the United States and the effect of such importation on grade and market value of domestic grain.

Facts are secured based on actual tests as to the relation between the milling and baking value of wheat to commercial grade; likewise, between grade and feeding value of sound and unsound corn, and natural and bleached oats, and inquiries relative to these subjects are answered through this office.

In terminal markets, practically all factors entering into the methods of handling, grading, and transportation of grain, and the fixing of definite grades thereof, are studied in detail. Tests are made for soundness, moisture content, weight per bushel, admixtures of other grains, impurities, etc.

AVOID MIXED VETCH SEED.

Some seed dealers are offering a mixture of weed vetches and hairy vetch as "mixed vetch" seed. In Russia, which is one of the principal sources of hairy vetch seed imported into the United States, hairy vetch is not raised as a crop, but is separated from rye in which it occurs as a volunteer. In this way the seed of many kinds of weed vetches occur mixed with hairy vetch seed, but are cleaned out before marketing the hairy vetch. These cleanings, containing a mixture of wild vetches and other seeds as well as some hairy vetch seed, are usually sold as pigeon feed, the use to which they should be put. Some lots have been imported into the United States and either used as an adulterant of hairy vetch seed or sold as mixed vetches. These mixtures are of little or no value aside from the hairy vetch seed they contain, and they should not be used for seeding purposes. Hairy vetch seed can be easily distinguished from the seed of other vetches by the difference in color of the interior of the seed. Crushed hairy vetch seed is of a lemon-yellow color, somewhat lighter on the flat than on the rounded surface. The crushed seed of most of the other vetches occurring with the seed of the hairy vetch varies in color from a dark fawn to reddish orange.

Crush a small handful of seed and if there are any fawn, salmon, or reddish orange colored pieces the seed is not pure hairy vetch.

NEW BULLETINS ISSUED.

No publications are sold by the department; therefore do not send money to this office.

Copies of any of the publications listed herein may be obtained free upon application to the Editor and Chief of the Division of Publications, United States Department of Agriculture, Washington, D. C., as long as the department's supply lasts.

When this department's supply is exhausted publications can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., by purchase only, and at the prices noted herein. Send all remittances to the Superintendent of Documents direct. His office is not a part of the Department of Agriculture.

Production of Clean Milk. 18 pages, 6 illustrations. (Farmers' Bulletin 602.)

This bulletin is intended to be of special value to all persons engaged in the production of milk, and also to consumers who are interested in procuring clean, safe milk.

Arsenical Cattle Dips; Methods of Preparation and Directions for Use. 16 pages, 1 illustration. (Farmers' Bulletin 603.)

Applicable only to that part of the United States infected with the Texas fever tick.

Collection and Preservation of Insects and Other Material for Use in the Study of Agriculture. 18 pages, 15 illustrations. (Farmers' Bulletin 606.)

This bulletin is intended for the use of teachers in rural schools throughout the country.

Removal of Garlic Flavor from Milk and Cream. 4 pages, 1 illustration. (Farmers' Bulletin 608.)

Domestic Breeds of Sheep in America. 59 pages, 28 illustrations. (Department Bulletin 94.) Price, 25 cents.

This bulletin gives detailed information as to the origin, adaptability, distribution, distinguishing characteristics, etc., of the various domestic breeds of sheep. It is of especial interest to sheep breeders and to the sheep grower who is desirous of securing the best breed adapted to his particular locality.

The Application of Refrigeration to the Handling of Milk. 88 pages, 37 illustrations. (Department Bulletin 98.) Price, 10 cents.

Discusses the application of refrigeration in the operation of the modern milk plant and describes the various forms of mechanical and other systems of cooling. Of interest to producers, shippers, dealers, and consumers of milk generally, and also to manufacturers of refrigeration machinery and appliances.

The Oat Aphis. 16 pages, 9 illustrations. (Department Bulletin 112.) Price, 5 cents.

This bulletin describes an insect found on the small grains, more especially oats. The bulletin is of interest to growers of cereals.

Fattening Cattle in Alabama. 41 pages, 4 illustrations. (Department Bulletin 110.) Price, 5 cents.

This bulletin is a report of progress on experiments begun in 1901 in cooperation with the Alabama Agricultural Experiment Station and reported in B. A. I. Bulletins Nos. 103, 131, 147, and 159, and department Bulletin 73, and gives the results of work done during the last and two preceding years. It is applicable to those portions of the South where the climatic conditions and pasture grasses are similar to those in that section of the State where the tests were made.

The Alfalfa Caterpillar. 40 pages, 22 illustrations. (Department Bulletin 124.) Price, 10 cents.

This bulletin is especially applicable to the Southwest, where the alfalfa caterpillar occurs in destructive numbers in irrigated alfalfa fields.

Operating Costs of a Well-Established New York Apple Orchard. 16 pages, 3 illustrations. (Department Bulletin 130.) Price, 5 cents.

This bulletin contains data on the cost of producing apples on a mature orchard operated in connection with a general farm in western New York. The information is applicable to all similar operations.

Directory of Officials and Organizations Concerned with the Protection of Birds and Game, 1914. 16 pages.

The Pink Bollworm. 6 pages, 5 illustrations. Price, 5 cents.

This circular gives information about an insect that damages cotton crops and whose importation into this country is to be guarded against. It is of especial interest to both cotton growers and manufacturers.

The Superintendent of Documents has just issued a list of 22 pages, giving titles and prices of Government publications on Soils and Fertilizers. This list will be sent free in response to a post-card request addressed to the Superintendent of Documents, Washington, D. C.

To Applicants for the Index to the Weekly News Letter.

A large number of applications for the index to the Weekly News Letter have been received. The index is still in course of preparation, and as soon as it is published it will be mailed to all who have applied for it. In the meantime, no individual acknowledgment will be made of applications.

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Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

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SEP 25 1914

COMMERCIAL TURKESTAN ALFALFA SEED INFERIOR.

Investigations by the department have failed to discover any reason for the common practice of selling commercial Turkestan alfalfa seed at a higher price than that obtained for domestic seed. Turkestan alfalfa has been grown in the United States for about 15 years, with the result that it is now declared that this variety has nothing to recommend it for general use in this country. It is particularly unsuited to the humid climate of the East, and is not sufficiently hardy to warrant its general use in the upper Mississippi Valley, where hardiness is an important factor. In Europe it has been found equally unsatisfactory, and in consequence brings a lower price in the markets there than locally grown seed; or, where this is not available, French or Italian.

As a matter of fact, it is largely because of this that such a large percentage of the imported alfalfa seed used in this country comes from Turkestan. Seed from this source can be imported cheaper than that from France or Italy, and the mistaken belief in its superior qualities has led to its very general use. Approximately one-fifth of the alfalfa seed planted in this country comes from abroad, and of this quantity, 95 per cent from Turkestan. In spite of the fact that the Turkestan product brings a lower price at wholesale, its retail price is frequently higher than that of any other variety. This condition of affairs seems particularly unreasonable, in view of the fact that commercial Turkestan seed has been found to give inferior yields of hay, even when it does not suffer from drought or winter killing.

The specialists of the department are careful to point out that commercial Turkestan seed of promiscuous origin should not be confused with the special strains of hardy alfalfas that have been developed from certain introductions of seed from Turkestan made some years ago. There are, undoubtedly, valuable varieties of alfalfas in central Asia, but at the present moment these are useful chiefly for experimental work in selection and breeding.

Under existing conditions the department warns alfalfa growers to avoid the use of commercial Turkestan seed. Fortunately, this can readily be identified by the presence in it of Russian knapweed seeds. These are slightly larger than alfalfa seeds and can not be removed by any practicable method of machine cleaning. Their chalky-white color makes them conspicuous, and their symmetrical, slightly wedge-shaped form distinguishes them from the notched seed of kindred species often found in Italian and other varieties of alfalfa. The seeds of Russian knapweed, however, are never abundant, and for this reason lots of alfalfa should always be examined in bulk. Small samples are not sufficient to enable the purchaser to ascertain whether or not the seed comes from Turkestan.

DO NOT HOLD MARKETABLE EGGS TOO LONG.

The department advises the farmer who specializes in marketing eggs to market his product frequently. The farmer often makes use of an egg case in which to keep his eggs and carry them to market. Sometimes he owns the case and sometimes it is furnished by the storekeeper. Often the case is one holding 30 dozen eggs, and as there is a tendency to wait until the case is filled, which takes considerable time with the average-sized flock, before taking it to market, the quality of some of the eggs will have suffered appreciably. Fifteen-dozen size cases are also used for this purpose and are much preferable, as they encourage more frequent marketing.

Another factor which influences the frequency of marketing is the distance of the farm from the village or country store. The greater the distance, the less often are the trips made, and consequently the less convenient it is to market eggs frequently.

The department has made investigations on 90 Kansas farms to discover how the distance from market influences the frequency of marketing eggs. Twenty-six of the farmers sent their eggs twice a week to market, 61 sent them once a week, and 3 only once in two weeks. The following table gives the average distances that these different farmers were from market. It shows how important a reasonably near market is to the farmer who hopes to make a success of selling eggs.

Twice weekly.		Weekly.		Once in two weeks.	
Number. of farms.	Average. distance.	Number. of farms.	Average. distance.	Number. of farms.	Average. distance.
26	*Miles.* 2.48	61	*Miles.* 4.12	3	*Miles.* 8.5

UNPOLISHED AND UNCOATED RICE.

An investigation by the department shows a widespread popular misunderstanding of the various kinds of rice on the market. The true distinction between the polishing and coating processes and the corresponding polished and coated rices does not seem to be clearly appreciated.

Rice from the threshers, called in the Philippine Islands *palay*, is hulled in many places by pounding by hand, but usually in a machine designed to remove the outer coat without injuring the seed. This product is almost always polished in order to please the fancies and conform to the established requirements of the consumers.

The polishing process, as understood in the Orient and by the best authorities in this country, refers to the rubbing or scouring of the grains in various machines by which most of the bran coat or pericarp is removed. This product is often coated to improve its appearance. The coating process refers to the addition of glucose, talc, or other foreign material to the surface of the already polished grain. The peoples of Asia use some true unpolished rice; that is, rice from which the hulls have been removed but on which the bran coat remains nearly intact. Such an article is very seldom furnished in the United States where the market supply is composed principally of polished rice, most of which has also been coated. Polishing removes a considerable portion of the fat, fiber, and inorganic salts, as well as flavor from the grain and some substances vital to nutrition.

The whole question has aroused considerable interest in this country because it has been shown that the disease known as beriberi, which is common in the Orient, is due to the consumption, as the main article of diet, of rice that has had the bran coat removed. This bran layer, in the case of the people who live largely on rice, is the only source of certain compounds necessary to the processes of nutrition. The absence of these compounds in the ration results in beriberi. Those who eat a varied diet get these elements in other foods.

Formerly in the Orient rice was milled to a great extent by hand or by inadequate machinery, so that little more was done than to pound off the coarse outer hull, leaving the bran layer of the rice nearly intact. With the introduction of modern machinery into the Orient the extensive machine milling of rice has developed. Much rice in the Orient is now very highly milled, so that all the bran coat is removed. It is believed by the health authorities of the Philippine Islands that highly polished rice tends to produce beriberi among the natives. For this reason the Philippine Government permits its hospitals, jails, and public institutions to use only rice that has not been highly polished. The elimination of beriberi from these institutions has resulted.

This fact has been made use of by certain manufacturers and food faddists in this country to frighten the public, and by so doing to gain a market for their product. They have called their rice "unpolished" when as a matter of fact in many cases the rice they were selling would not be permitted in the institutions controlled by the Philippine Government. All the circumstances in the case should be considered. Since it has been proven that Filipinos, Chinese, Japanese, and other Asiatics and Malaysians contract beriberi by eating highly milled, polished rice, it does not follow that eating such rice in the United States is dangerous. If the American people lived almost wholly on rice, as do many Filipinos, Chinese, Japanese, and other peoples, it would certainly be dangerous. However, in America rice constitutes only a small proportion of the diet, and with the variety of foods usually consumed no danger whatever of contracting beriberi or similar diseases is likely to come from eating polished rice.

THYROID A DANGEROUS WEAPON AGAINST FAT.

The department has found in the course of a recent investigation into the composition of the so-called obesity cures that a large number of these contain thyroid. Thyroid, in the opinion of the Government scientists, is far too dangerous a weapon for inexperienced persons to experiment with. The thyroid gland itself is one of the mysteries of the human body that the medical profession does not yet fully understand. We know that it is essential to life and that when used as a drug it has a very powerful effect upon the whole human system. This information should be sufficient to warn anyone against dosing himself blindly with the drug.

The thyroid gland is an organ which varies considerably in accordance with the kind of animal in which it occurs. In man it is situated in the throat in front of and on both sides of the larynx, and consists of two lateral lobes united by a narrow bridgelike central portion. Its presence in the body is apparently necessary to the health of its possessor, but administered in the form of a drug it may have anything but a healthy effect upon its user.

For medical use a number of sheeps' thyroids are dried at a temperature of from 90° to 100° F. and then powdered. This powder may be administered either dry or, when treated with glycerin, as a liquid. It indubitably does reduce tissue, and therefore those preparations that contain it are especial favorites with persons who desire to rid themselves of what they think is superfluous flesh. Unfortunately it is not possible to remove tissue at will without running great risk of destroying health at the same time. Abnormal deposits of fat are frequently accompanied by disorders of the heart, blood vessels, and kidneys. To remove these deposits abruptly may well produce serious mechanical effects upon the operation of the internal organs. For this reason the medical profession has long recognized that obesity should be considered as a condition worthy of the most skillful treatment and that a cure is never easily and quickly attained. Thyroid preparations, moreover, are particularly objectionable because of the direct effect of the substances composing them. These substances, administered in drug form, may produce symptoms

which are commonly associated with certain forms of goiter, namely, rapid and irregular pulse, palpitation of the heart, nervous irritability, duskiness of the skin, difficulty in breathing, paralysis, and even death.

Trained physicians may administer the drug to obtain certain desired effects, but they know that they must use great care in doing so and must be prepared to grapple with serious complications that may arise in consequence of its administration.

THE USE OF CHEMICAL PLANT POISONS IN KILLING WEEDS.

In many letters received by the department on the subject of weed eradication request is made for a "remedy," by which term the writers often have in mind a herbicide or chemical plant poison that will accomplish the destruction of weeds with little effort on their part. In many of these cases the use of plant poisons is out of the question, as the weeds can be controlled much more easily by some other method. It is well to define limitations as well as to point the advantages of employing these materials. The use of chemical plant poisons may be grouped under the following headings:

1. *With crops on the land.*—(*a*) General applications that kill certain weeds but do not injure the crop, such as iron sulphate solution for killing wild mustard in grain fields or dandelion in lawns; (*b*) scattered applications for the purpose of killing individual weeds or groups of weeds, as salting live stock on patches of Canada thistles or applying arsenite of soda solution to plantains in a lawn.

2. *Without crops on the land.*—(*a*) Applications to kill the weedy growth, after which crops are to be grown; (*b*) applications to kill all vegetation and prevent as far as possible future growth of any vegetation, in other words, to sterilize the soil.

It is the second of these headings—using herbicides without crops on the land—that will be considered here. Killing the weeds by plant poisons and afterward growing crops on the same land is a subject that seems to be of much popular interest. There are but few situations, however, where this method is feasible. In Australia fields containing prickly pear have been sprayed with an arsenite of soda solution, and after the pear has been killed the land plowed and planted to crops. The specialists of the department have found it satisfactory to handle honeysuckle under certain conditions by spraying the tops with fuel oil or crude petroleum and after the leaves are dead and dry setting fire to them. This removes all the tops and obviates the great inconvenience encountered in cutting them off or plowing them under.

Considerable attention has been given to applications for killing the vegetation and sterilizing the soil. This method is applicable to driveways, pathways, tennis courts, railroad rights of way, and similar situations. For the past five years experiments have been made at Arlington Farm to find the best material, the best strength of application, the best time of application, and other points. The list of materials used embraced practically all those that have been suggested as being suitable for this purpose, including the following: Arsenite of soda; arsenate of soda; common salt; fuel oil; kerosene; gasoline; crude petroleum; sulphuric acid; coal-tar creosote oil (containing crude carbolic acid); iron sulphate; caustic soda; calcium chloride; sal soda. The prices at which these materials could be obtained were assigned in order that they might be compared in cost, as well as in effect. These tests have shown that of all these materials there are three which, at the prices assigned, are better than any of the others, namely, arsenite of soda, common salt, and fuel oil.

There are several points to be considered in selecting the best material among these three. The prices used as a basis were as follows: Commercial arsenite of soda, 25 cents per pound; common salt, $12 per ton; fuel oil, 12 cents per gallon. These are approximately the maximum prices which the small purchaser would be asked to pay. Under certain conditions the consumer may find the price of one of these substances relatively lower than the others. For instance, refuse salt can sometimes be obtained at a very low price. The character of the vegetation also governs the choice; broad-leaved plants seem to be relatively more affected by arsenite of soda than by salt or oil, as compared with narrow-leaved vegetation, such as grass. Salt is often objectionable when used on brick walks or other conspicuous places on account of the white residue which remains for some time.

As to the number of applications required, it has been found that several light applications are better than one heavy one. This is partly due to the fact that weed seeds in the soil, which are but little affected by these treatments, germinate and produce a new crop of weeds after the first crop is killed. After the first year, however, the number of applications may be reduced until weeds entirely cease to come up.

The quantity of these herbicides to use depends on the character of the vegetation and the soil. On some of the arsenite of soda plats where the vegetation was largely broad-leaved plants the tops had been practically killed by a remarkably light application at a cost of $1.50 per an acre. The effects, however, were merely temporary and new tops immediately sprang up. As an illustration of the quantity of material required, a weedy driveway having such plants as blue grass, crab grass, plantain, clover, and dandelion could be almost cleared by treating it with any one of the following substances, the amounts being given on a basis of 1 square rod: One-fourth pound of commercial arsenite of soda dissolved in 6 gallons of water; 22 pounds of common, coarse salt dissolved in 9 gal-

lons of water; or 1 gallon of fuel oil. All these applications would cost approximately 12 cents per square rod, or $20 per acre, for the materials.

In the experiments the results with common salt have been somewhat erratic, so that preference should be given the other two substances. If a small area is to be treated and the cost is therefore not a primary consideration, salt should be used in larger quantities than advised above, dissolving it at the rate of 1 pound to 1½ quarts of water. All applications should be made when there is no prospect of rain for 24 hours.

NITRATE OF SODA ON OLD MEADOWS.

On an old meadow which has not been properly fertilized a top dressing of nitrate of soda is almost certain to show very marked results. The farmer is likely to be so enthusiastic over the showing made that he at once concludes that nitrogen is the one factor needed to make his hay crop a profitable one. Right here lies the danger. While the first application of nitrate of soda may show these marked results, it is not by any means safe to conclude that nitrogen is the only element of fertility needed. Repeated applications of nitrate of soda may soon result in no apparent benefit and even result in a final condition worse than the original condition. The first application of nitrate of soda shows such marked results because there is a marked deficiency of nitrogen in the soil; but there is sufficient of the other fertilizing elements, particularly phosphorus and potassium, to balance the nitrogen used. The increased crop yields from the use of nitrate of soda make an increased drain upon the available phosphorus and potassium of the soil. No effort being made to replace these elements thus removed, the time very soon comes when no response is received from the application of nitrate of soda, because the phosphoric acid and potash have been depleted, or, in other words, are the limiting factors. As a rule, where nitrate of soda is used as a fertilizer it is a safe principle to use in connection with it some form of phosphorus and potassium, having in mind permanent results rather than a temporary increase due to the nitrate of soda.

PROTECTION OF WOUNDS OF ANIMALS AGAINST FLIES.

When an animal is wounded, it is important to treat the wound in such a way as not to prevent its healing, and yet to prevent screw worms and house flies from attacking the open surfaces, laying eggs, or carrying infection to the animal.

The screw worm, particularly, deposits eggs in wounds, and there are other flies that may deposit their eggs in this way. The larvæ or maggots hatching from these eggs infest the wound and burrow more or less extensively in the surrounding tissues, so that serious damage may result.

The house fly alights on wounds to suck up the exudate, and is a cause of considerable annoyance to animals. It prevents wounds from healing and may introduce agents of infection which adhere to its body.

The department, in a bulletin on repellents for protecting animals from the attacks of flies, quotes the following formulas for application to wounds:

Jensen gives three formulas of repellents for application to wounds:

Formula No. 1:

Oil of tar	8 ounces.
Cottonseed oil to make	32 ounces.

Formula No. 2:

Powdered naphthalin	2 ounces.
Hydrous wool fat	14 ounces.

Mix into an ointment.

Formula No. 3:

Coal tar	12 ounces.
Carbon disulphid	4 ounces.

Mix; keep in a well-stoppered bottle and apply with a brush.

Mixtures Nos. 2 and 3 are said to adhere to moist surfaces, and No. 3 is said, in addition, to form a coating over raw surfaces and protect from the screw-worm fly.

The editor at the close of the article in which the above formulas are given adds the following formula:

Oil of turpentine	1 dram.
Phenol	1 dram.
Cottonseed oil to make	4 ounces.

Mix and apply freely to wounds.

It is stated that this remedy is highly effective and is used widely in the South. It is said to induce healthy granulation of wounds.

DIRECTIONS TO THOSE SENDING FRUITS FOR IDENTIFICATION.

In order to avoid disappointment, those sending fruits to the department for identification should observe the following points:

In all cases the local name of each variety should be given, together with an account of the age, size, and habit of growth of the tree or vine, and any other points of interest regarding it. Each specimen should be well wrapped with paper and carefully packed in the mailing package.

With apples, pears, and quinces there should be three or four typical specimens of each variety. With the stone fruits there should be twigs and foliage and several typical fruits. With grapes there should be two or three typical clusters and two or three joints of the cane, with leaves attached.

All fruits sent should be ripe. This is especially desired because green uncolored specimens can not be correctly identified. Decayed or overripe fruit should not be sent, as it is of no value for this purpose and is likely to leak and injure the mails. Each variety should be numbered and the sender's name should be on either the inside or the outside of each package. The department sends suitable mailing boxes and postal franks upon request, so that specimens for identification may be forwarded without payment of postage.

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Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

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U. S. Department of Agriculture

WIRE RACKS EASILY MADE FROM FENCING WILL KEEP SEED CORN DRY.

Good seed corn is often ruined because the farmers believe their autumns are so dry that no special care is necessary after the ears are gathered. The vitality of seed is often reduced by leaving it in a sack or in a pile for even a day after gathering. To keep the seed

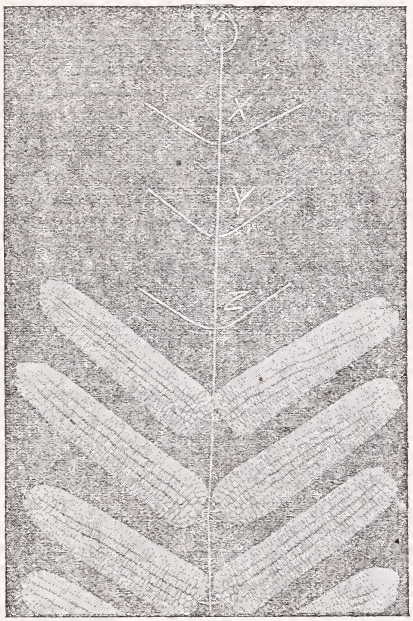

Fig. 1.—Completed wire rack made from fencing, with ears in place on all but three pairs of holders.

corn at its best, it should be put in a dry place at once where there is free circulation of air and where the ears will not touch each other.

The accompanying figure (No. 1) shows how seed ears may be suspended on a wire rack in a storehouse. Such racks may be very easily made from electrically welded fencing, and rows of these racks with the corn placed on them may be hung along the beam or rafter as is the one shown in the illustration.

All dealers in wire fencing can supply the necessary fencing for making these racks to farmers at a cost of about 10 cents for each bushel of seed suspended. Such racks will last many years and are easily stored when not in use.

Figure No. 2 shows how six racks similar to that in Figure No. 1 may be economically constructed out of a piece of fencing 2 feet wide with horizontal wires 4 inches apart and upright wires 2 inches apart.

The racks are made as follows:

The horizontal wires *d*, *e*, *f*, *g*, and *h* each form the backbone of a rack like that shown in figure No. 1. The two horizontal wires *c* and *i*, which will be left after the first five racks are made, may be twisted together to form a sixth rack, as shown in figure No. 2, *a* and *b*. The upright wires of the fencing are clipped, as shown in figure No. 2. The two outer upright sections attached to each of the horizontal wires *d*, *e*, *f*, *g*, and *h* are bent around to form a ring from which to hang the completed wire rack. The other sections of upright wire are bent out diagonally to form holders for the ears of corn (like the pairs *x*, *y*, and *z* in figure No. 1).

The upright wires in the original fencing are 2 inches apart, but, as only alternate wires are used on each rack, the holders for each pair of ears on the

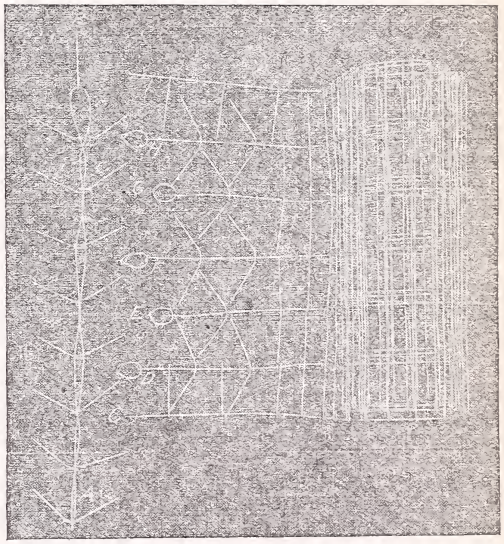

Fig. 2.—Showing process of making six wire racks out of a piece of 2-foot fencing.

finished racks will be 4 inches apart (*x* is 4 inches from *y*, *y* 4 inches from *z*, etc., in figure 1).

Electrically welded fencing equally suitable for making racks may also be obtained in rolls 3 feet or 4 feet wide.

Binder twine may also be used for hanging up seed ears, so that they will not touch each other; but the wire racks are more convenient and in the

end cheaper. If the twine is used, it will be found that 15 or 20 ears can be hung on one string. The upper end of each string is fastened to the beam or rafter, and the ears of corn, as tied on the twine, are about 4 inches apart.

The ingenious idea of making wire racks from lawn fencing, with no waste, is due to a seed-corn company.

MARKETING THE APPLE CROP.

According to the Office of Markets of the department present indications are that the commercial apple crop of the United States is much larger this year than last, but less than that of 1912 by several million barrels. However, it is estimated in the current number of the Agricultural Outlook of the department that the problem of distribution will prove to be more complex than two years ago, owing to certain conditions resulting from the European war.

Attention is called to the small quantity of American apples—less than 2,000,000 barrels—taken by Europe in normal times. Both the growers and dealers are urged to view the situation with optimism and to prepare for the disposal of Europe's usual portion in other ways. It is suggested that with judicious handling the demand at home may be increased and the commercial crop marketed with relatively fair success to all. As to just what constitutes judicious handling, the Office of Markets makes the following suggestions:

1. Growers should pick the fruit in uniform condition, gleaning the trees only for what is ready to come off, repeating the process until the crop is harvested. The advantage is to secure a longer time for distribution and to prevent the pack from representing extreme stages of maturity ranging from ripe to green.

2. When picked, the fruit should be handled from orchard to cars in such a way as to prevent deterioration, care being exercised to protect the apples from the elements. It is explained that under proper conditions fruit which is picked to-day should not be packed until to-morrow and that for this purpose shelter should be provided.

3. Those using the barrel package should uniformly grade and pack the crop in compliance with the Sulzer law and brand in accordance with its provisions, for the purpose of creating a feeling of confidence among dealers and consumers.

4. Inferior grades should be eliminated from the green-fruit markets, not only for the reason that the demand for such grades will be very limited, but also because their presence in the markets will undoubtedly hamper profitable disposition of the better fruit.

5. All apple growers, operators, dealers, and associations should early arrive at an estimate of true values in order to secure a quick movement. It is explained that if arbitrarily high prices rule in the beginning of the season, the crop will not pass readily into consumption, but that, on the other hand, abnormal accumulation and congestion will occur throughout the channels of trade, with disastrous results to all concerned.

6. Only standard varieties well packed should be placed in cold storage, for the reason that prices likely to rule in the late fall and early winter, as the inevitable result of liberal offerings of common storage stock, will probably limit the demand for cold-storage apples until midwinter.

7. An effort should be made to fully supply small towns by direct sales in order to secure a more uniform distribution and avoid congesting the large markets. Attention is called to the practice in some sections of growers who go with cars of apples to poorly supplied towns and sell on the track. Growers or dealers who desire to use this system should apply to the town and railway authorities for information as to regulations controlling such sales, and, if conditions justify shipping, the arrival of the car should be preceded by judicious advertising.

8. Growers who live in communities where cooperative organizations are operated should do all possible to strengthen these exchanges. It is asserted that the disloyalty of members is the chief element of failure in cooperative enterprises, and growers are strongly urged to support their association as the best way to effect satisfactory distribution.

Those who grade, pack, and brand their barrels in accordance with provisions of the Sulzer law should be more successful in making quick and satisfactory sales than otherwise. When apples are packed in a standard barrel as established by section 1 of the Sulzer law, and are plainly and conspicuously marked as containing one barrel of apples of one of the standard grades described in section 2, such a statement if true would constitute a satisfactory compliance with the net-weight amendment to the food and drugs act. Otherwise the package, if intended for interstate commerce, must be marked to comply with the net-weight amendment to show the quantity of the contents, either by weight or by dry measure or by numerical count. A statement of numerical count must be qualified by the size of the apples expressed as the average diameter in inches to be a statement of quantity.

With respect to Europe, the Office of Markets urges exporters to carefully watch the movement and assure themselves of steamer space and a demand on the other side before making shipments. Latest announcements of steamship companies are to the effect that fairly regular schedules will be maintained between America and the United Kingdom.

American apple shippers are advised to stimulate the demand and increase their shipments to Latin America and the Orient. It is suggested that by cooperating with the Department of Commerce, extension of trade in this respect can be accomplished. Inquiries relating to these countries should be addressed to the Bureau of Foreign and Domestic Commerce, Washington, D. C. Shippers are urged to apply to the superintendent of documents for the following publications issued by that bureau, which may be secured at the prices shown: Special Agents' Series, No. 62, 30 cents; No. 72, 10 cents; and No. 81, 25 cents; Special Consular Reports, No. 62, 10 cents; and Tariff Series, No. 19a, 5 cents. Remittances should be in cash or by money order. Stamps are not accepted. Attention is called to an announcement of the Department of Commerce that it will aid in every practicable way.

For the benefit of those who may not be disposed to exercise especial care in handling the crop, on the grounds that it will not be worth while, the Office of Markets suggests it as probably being true of this year that not only proper handling, but also great diligence will be required for effecting satisfactory distribution.

CRIMSON CLOVER A SUCCESS.

Crimson clover is a demonstrated success on practically every soil type in the South where the drainage is good. Its ability to succeed on nearly every kind of land in the cotton belt, from waxy clays to light sandy loams, makes it one of the best winter cover crops and soil builders for cultivated fields in this region.

Crimson clover is just as valuable as a soil-improving crop as cowpeas, and the cotton fields of the South should be covered during the winter with this valuable clover to furnish abundant winter grazing for all classes of live stock, to prevent soil erosion, and to enrich the land with nitrogen.

Crimson clover does best on a well-prepared, well-drained, well-settled, and a fairly fertile seed bed. The middles of a clean cultivated cotton field make an almost ideal seed bed for sowing crimson clover. The time of seeding is determined by the latitude. When sown too early the young plants are liable to be killed by hot, dry weather. In the northern third of the cotton belt probably the best results are obtained by sowing between September 1 and October 10; in the central third of the cotton belt from September 10 to October 20, and in the southern third of the cotton belt from September 20 to November 1. Successful growers of crimson clover, appreciating that the hot sun and the dry condition of the soil affect germination, usually endeavor to sow just after a rain or when there is prospect of rain.

Seed may be sown by hand or with an inexpensive clover seeder. Never less than 15 and preferably 20 pounds of seed per acre should be sown if good stands are to be obtained. Just after the first picking is an excellent time to seed crimson clover in cotton fields. The seed should be sown broadcast and lightly harrowed in with a spike to spring-tooth harrow. Poor stands frequently result from covering too deep.

Nitrogen in the form of nitrate of soda and cottonseed meal costs from 15 to 20 cents per pound, and is by far the most expensive fertilizing element that the southern farmer has to buy. Thirty-five thousand tons of atmospheric nitrogen lie above every acre of land in the South. Crimson clover has the power to collect and store this nitrogen in the plant at the rate of from 75 to 125 pounds per acre. Probably half of this is taken direct from the air. In other words, an acre of good crimson clover, where the entire crop is turned under, has the fertilizing value of from 450 to 750 pounds of nitrate of soda or from 1,080 to 1,800 pounds of cottonseed meal. In feeding value crimson clover hay compares very favorably with alfalfa and cowpea hay, and is relished by all kinds of live stock.

The chief difficulties in saving crimson clover hay lie in the usually cool, moist weather conditions prevailing about the time the hay is ready to mow and the press of other farm work at this period. For these reasons, unless hay is very scarce, it is often advisable to turn under the entire crop to enrich the soil.

Crimson clover furnishes excellent grazing for all classes of live stock during the late winter and early spring. For this purpose it is much superior to rye, oats, or any other nonleguminous winter cover crop.

Experience has shown that a valuable rotation for southern farms consists of a three-year rotation of oats and peas, cotton, and corn and peas. The only defect in this rotation has been the lack of leguminous winter cover crops. The value of this rotation may be almost doubled by the use of crimson clover sown in the cotton middles in the fall and on the pea or lespedeza stubble following the oat crop. This would give a rotation as follows:

First year: Cotton with crimson clover sown in the middles in the fall. Second year: Corn on clover sod with peas sown in corn at the last cultivation. Third year: Oats sown in the fall, followed by lespedeza or peas after the oats, and crimson clover sown on the lespedeza or pea stubble in the fall. Such a rotation as this furnishes three staple crops and four soil-improving and grazing crops on the same land in three years, filling the land with humus and making unnecessary the purchase of nitrogenous fertilizers.

IMPORTANCE OF ROAD MAINTENANCE AND REPAIR.

There is no phase of the road problem more important than that of maintenance. The general impression that there are certain types of roads that are permanent is erroneous. No permanent road has ever been constructed, or ever will be, according to the road specialists of the department. The only things about a road that may be considered permanent are the grading, culverts, and bridges. Roads constructed by the most skillful highway engineers will soon be destroyed by the traffic, frost, rain, and wind, unless they are properly maintained. But the life of these roads may be prolonged by systematic maintenance. A poor road will not only be improved by proper maintenance, but may become better in time than a good road without it.

The first and last commandment in earth road maintenance is to keep the surface well drained. To insure good drainage the ditches should be kept open, all obstructions removed, and a smooth crown maintained. Except for very stony soil the road machine or scraper may be used very effectively for this work. The machine should be used once or twice a year, and the work should be done when the soil is damp, so that it will pack and bake into a hard crust. Wide and shallow side ditches should be maintained with sufficient fall and capacity to dispose of surface water. These ditches can in most places be constructed and repaired with a road machine.

All vegetable matter, such as sods and weeds, should be kept out of the road, as they make a spongy surface,

which retains moisture. Clods are also objectionable, for they soon turn to dust or mud, and for that reason roads should never be worked when dry or hard. Bowlders or loose stones are equally objectionable if a smooth surface is to be secured.

A split-log drag or some similar device is very useful in maintaining the surface after suitable ditches and cross section have once been secured. This drag can also be used to advantage on a gravel road as well as on an earth road. The principle involved in dragging is that clays and most heavy soils will puddle when wet and set very hard when dry. The little attention that the earth road needs must be given promptly and at the proper time if the best results are to be obtained.

In dragging roads only a small amount of earth is moved, just enough to fill the ruts and depressions with a thin layer of plastic clay or earth which packs very hard so that the next rain instead of finding ruts, depressions, and clods in which to collect runs off, leaving the surface but little affected.

The drag should be light and should be drawn over the road at an angle of about 45°. The driver should ride on the drag and should not drive faster than a walk. One round trip, each trip straddling a wheel track, is usually sufficient to fill the ruts and smooth the surface. If necessary, the road should be dragged after every bad spell of weather, when the soil is in proper condition to puddle well and still not adhere to the drag. If the road is very bad, it may be dragged when very wet and again when it begins to dry out. A few trips over the road will give the operator an idea as to the best time to drag. Drag at all seasons, but do not drag a dry road.

The slope or crown of an earth road should be about 1 inch to the foot. If the crown becomes too high, it may be reduced by dragging toward the ditch instead of from it. If the drag cuts too much, shorten the hitch and change your position on the drag. If it is necessary to protect the face of the drag with a strip of iron, it should be placed flush with the edge of the drag and not projecting. A cutting edge should be avoided, as the main object in dragging is to smear the damp soil into position.

THE COTTON WORM.

The cotton worm, or army worm as it frequently is called in the South, is now attracting considerable attention throughout the cotton belt. This insect has been known as an enemy of cotton in the United States for over a century, but for many years it was so scarce that recent outbreaks have caused considerable comment. Before the appearance of the boll weevil it was one of the two principal enemies of cotton in this country, the other being the bollworm. An account published by a Mississippi cotton planter in 1846 describes the almost total destruction of the cotton crop of that year from defoliation by the cotton worm. At that time no efficient means for combating the insect were known. About 1871, however, the use of Paris green for this purpose began to be practiced and was soon found to be satisfactory.

The cotton worm varies greatly in size and coloration at different periods, but the form generally seen may be described as follows: Length, about 1½ inches; upper surface with a broad brownish or perfectly black stripe. Down the center of the stripe is a fine yellowish line, and similar lines bound the black area on either side. Each segment bears four black dots upon its upper surface and four smaller ones on either side.

This pest is not a native of the United States, nor has it been able to establish itself here permanently, owing to the fact that it can not withstand the cold of our winters. Each year a fresh invasion of parent moths from Central or South America must occur if the cotton worm is to be present that season. The first moths usually reach the region of Brownsville, Tex., about April. Here they start a new generation in the cotton fields, and this and succeeding generations rapidly spread farther north.

The powers of flight possessed by the moths are remarkable, as they have been found as far north as Maine and Canada in the fall. It is evident that individual moths must have flown from the cotton belt to these northern points, as the insect does not breed upon any plant but cotton. Some feeding is done by the adults, however, upon such fruits as peaches, apples, grapes, and pears, and this at times has attracted considerable attention in the Northern States, and has created some alarm. As a matter of fact the insect is not to be regarded as a serious pest of these fruits.

The moths also quite frequently attract attention by appearing in large swarms about artificial lights at night. In fact, they are entirely night fliers, and are very little in evidence during the day even in the cotton fields.

The damage done to the cotton plant by the larvae or "cotton worms," hatching from eggs laid by the moths, is often very great, unless efficient control measures are adopted and intelligently carried out. The leaves are attacked first, and may be totally destroyed. In cases where the worms are very abundant the bolls, squares, and even the twigs may be attacked after the leaves have been destroyed.

By far the best method of control is the use of powdered arsenate of lead. This substance does not injure the foliage, as Paris green does under some circumstances, and adheres to the leaves in spite of considerable rainfall. It should be dusted over the plants, preferably in the early morning, while the dew is on and little wind is stirring, at the rate of about 2 pounds per acre. Paris green may be used if arsenate of lead is not available. To lessen the danger of burning the plants, air-slaked lime and Paris green should be used in equal parts. Whether the lime is used or not, flour should be used with the Paris green in equal parts. This will assist greatly in causing the poison to adhere to the foliage. Either of the poisons mentioned may be applied very satisfactorily by sifting them from cloth sacks at the ends of poles.

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Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

VOL. II WASHINGTON, D. C., OCTOBER 7, 1914 No. 9

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THE DUTY OF A GOOD NEIGHBOR.

RIGID QUARANTINE A MORAL OBLIGATION IN THE CASE OF CONTAGIOUS DISEASES.

Every family which has a member ill with typhoid fever, scarlet fever, or other contagious disease, is entitled to the sympathy and intelligent help of the community. At the same time, the stricken family should realize fully that simple good citizenship calls upon its members to do everything in their power to prevent the spread of the contagion to neighbors. In the country especially, where there are seldom health officers to impose rigid quarantines, the duty of keeping the sick separated from the well falls with peculiar weight on the afflicted family. Ordinary neighborliness demands that such a family keep its members away from others and prevent outsiders from coming in contact with the infection.

On a farm producing and selling milk, a contagious disease such as typhoid or scarlet fever demands special precautions. A very few germs of these diseases allowed to get into the milk may multiply rapidly and be a source of disease in many families on the milk route served by the farmer.

In the case of typhoid, the disease may come from germs in the well water, and this water if used unboiled for cleansing milk bottles or cans may very well start a typhoid epidemic in a neighboring town. Inspectors have frequently traced outbreaks of scarlet fever and typhoid along a milk route and back to a sick person on the producer's farm.

It is the duty of every milk farmer to see that no one who is suffering from fever of any kind ever enters the dairy. Moreover, no one engaged in nursing the sick should ever be allowed to go near milk. Those who handle the milk on such farms, even though they never have been near the person who is sick, should take special precautions. Before entering the milk room they should put on a clean cap and a clean duster, which are never allowed to go into the house. In cases of typhoid or suspected typhoid all water used in cleansing milk vessels should first be boiled. Finally, even with all these precautions, wherever typhoid or scarlet fever is even suspected in a family, the milk should be thoroughly pasteurized before being sold.

The milk producer who takes these precautions establishes his good citizenship. The one who handles milk carelessly with sickness in his family is, though he may not realize it, a possible enemy to his customers.

Such precautions are doubly necessary where the owner of the farm is the sufferer, because the milk is apt to be handled carelessly for lack of his supervision. Inspectors recently following up a case of bad milk found the owner of the farm sick with a bad case of typhoid fever. He gave his illness as a reason for his not being prosecuted, because the low quality of the milk was due directly to its handling by inexperienced persons. Investigation proved that the farmer's illness was one of a succession of cases of typhoid that had occurred on this farm. The probability, therefore, was that the milk being sent out before the farmer was sick was dangerously contaminated, while, of course, the risk after illness had withdrawn his attention was vastly increased.

In many cases where an outbreak of typhoid has been traced back to a dairy the owner was not deliberately careless. Typhoid fever is not always readily recognized as such, and not uncommonly passes simply as a fever or bowel complaint. For this reason every case of fever on a dairy farm should be regarded with suspicion and lead to very careful handling of the milk.

Members of households in which there are contagious or suspicious illnesses also have an important part to play in keeping the milk supply clean. They should never return empty milk bottles without first boiling them, and any family which takes a public milk bottle into a room where there is a contagious disease is really a party to a serious offense against public health. A milk dealer who learns of a case of sickness in a family should keep the bottles from that house separated from the others and make certain that they are very carefully sterilized before they are again used for milk.

Even where there is no sickness on a farm, the dairy farmer should use every effort to produce a high grade, clean milk from healthy cows. Sterilization of bottles and other milk vessels is essential.

GOURD, TOMATO-CAN, AND OTHER SIMPLE HOUSES WILL ATTRACT DESIRABLE BIRDS.

An ordinary tomato can with a circular piece of board fitted in one end will make an excellent house to attract bluebirds or wrens. The board should have a hole in its upper half to serve as an entrance and the can may then be hung by wires to the limb of a tree or fastened to a crotch. A new Farmers' Bulletin (No. 609), entitled "Bird Houses and How to Build Them," has been issued by the department, and in it

are outlined plans for bird houses of all descriptions from the simple tomato-can house to a most elaborate martin house with doors that open and close.

Many birds that are economically valuable may be attracted to particular localities by the construction of bird houses. The importance of birds as insect destroyers is being more appreciated every year, and as a result there has been a decided movement to protect and make neighbors of them. Many birds, if furnished a safe retreat, will more than pay their rent to their landlords.

The tomato can may be used in another manner to attract the desirable wren or bluebird. One end may be removed and the can may be superimposed on a post of the same size and fastened securely by pressing it down. A hole should be cut in the side to permit the bird to enter. (See fig. 1.) This tomato-can house, as well as the other one described, should always be put in a shaded place, as the metal becomes very hot in the sun.

Simple bird houses have long been made in the Southern States from gourds. The entrance is in the side and there is a drain hole made in the bottom. A piece of wire through the neck for mounting it completes the house. A number of gourds thus prepared and strung on a pole with a cross piece seems to make a satisfactory tenement house for a colony of martins.

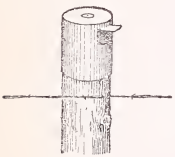

FIG. 1.—Tomato can, with one end removed, fastened to top of post. Hole cut in side for entrance. Suitable for bluebirds or wrens if put in shady place.

FIG. 2.—Gourd for martins.

FIG. 3.—House made from hollow log.

Used singly they are equally well adapted to wrens and bluebirds. While gourds are not durable when exposed to the weather, they are easily replaced. (See fig. 2.)

Ordinary wooden boxes, if clean, can be made into simple bird houses by merely nailing on a cover and cutting out an entrance hole. Such makeshifts are rarely weatherproof and are never pleasing to the eye.

Branches containing real woodpecker holes, when obtainable, are perhaps the best attraction that can be offered most house birds in the breeding season. By carefully fitting such a branch to a fruit or shade tree, its foreign origin will scarcely be noticed.

One house comparatively easy to construct (see fig. 3) is suitable for use in trees. It is made from a log or large branch, hollowed by decay and fitted with a top and bottom. The cover is to go on after the log is fastened in place. Either the top or bottom should be removable. Another way of making a log house is to split a straight-grained log 2 feet or more in length through the middle and then to cut out a cavity with a gouge. The excavations in the two halves can be made to match exactly by means of a pattern or template having the size and shape desired for the proposed cavity through the plane of cleavage. (Fig. 4 shows the appearance of such a house and how to place the template symmetrically on each half of the stick.) The top of this house should be covered with tin or zinc to keep out moisture. The halves should be fastened together with screws to allow the house to be taken apart and cleaned.

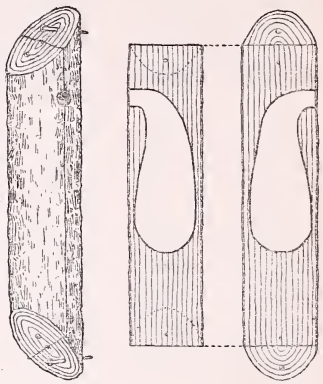

FIG. 4.—Log split and halves marked to be gouged out to form a cavity. Halves to be screwed together. Top should be covered with tin or zinc.

THE ENGLISH SPARROW SHOULD NOT BE ENCOURAGED.

The English sparrow, whose attacks often drive other birds away from the neighborhood, will not be encouraged by the careful landlord. The department's Farmers' Bulletin (No. 493) entitled "The English Sparrow as a Pest," gives recommendations to those who wish to free their premises of this undesirable bird.

There are other undesirable prowlers that seek to injure desirable feathered tenants and must be watched by the careful landlord. Cats and large snakes are enemies of birds, the former, perhaps, killing more than any other mammal. Trees and poles supporting houses should be sheathed with tin or galvanized iron to prevent these enemies from climbing to the nests.

The fact that there is a limit to the possible bird population on any given tract must be taken into consideration in building houses for them. When the probable tenants have been decided upon, the selection of sites is in order, for the site often decides the style of house that is to occupy it. Birds often have decided notions as to the proper surroundings for a dwelling. Martins prefer to breed near houses, but not within 20 feet of trees or buildings. Bluebirds are inclined to select orchards or pastures having scattered trees. Wrens, thrashers, and catbirds live in thick shrubbery. Robins like trees with sturdy

trunks and branches. The new publication gives a great deal of information about these individual preferences of birds.

In the final placing of bird houses care should be taken to have them face away from the winds prevailing in stormy weather. The strongly developed homing instincts of birds can be relied on to attach them to the neighborhood where they first saw the light, and the identical pairs which nest in the houses provided for them one year will often return the next season to enjoy the same bounty and protection.

There are other means of attracting one's bird neighbors besides building houses. In winter if they are supplied food they will haunt the premises, and the new bulletin gives plans for an adequate shelter where food may be left. In summer still other means must often be sought to make them sociable. On warm days they particularly appreciate fresh water for drinking and bathing. A shallow pool of varying depth, if only a foot across, becomes a center of attraction for all the birds in the vicinity, and it may be made with little effort and material; only a small amount of cement is required, or, if that be lacking, a pan with stones in it set in the ground will be equally serviceable.

Bird lovers may obtain the new bulletin, with its 19 pages of instruction, including 48 diagrams, by writing the department.

GRATIFYING RESULTS FROM ANTIHOG-CHOLERA SERUM.

An interesting report received by the department from county agents in 15 Southern States affords additional evidence of the value of antihog-cholera serum in preventing the spread of this disease. Although many authorities do not advocate the treatment after the hog has become visibly affected, this report appears to indicate that a considerable saving was effected in this way.

Briefly summarized, the figures are as follows:

RÉSUMÉ.

1.	Number of hogs given single treatment	34,266
2.	Number of hogs that were well when treated	27,226
3.	Number died that were well when treated	608
4.	Per cent died that were well when treated	2.22
5.	Number of hogs that were sick when treated	7,040
6.	Number died that were sick when treated	2,057
7.	Per cent died that were sick when treated	29.21
8.	Number of hogs given simultaneous treatment	7,713
9.	Number of hogs that were well when treated	7,410
10.	Number died that were well when treated	179
11.	Per cent died that were well when treated	2.41
12.	Number of hogs that were sick when treated	303
13.	Number died that were sick when treated	160
14.	Per cent died that were sick when treated	52.85
15.	Total number of hogs treated	41,979
16.	Total number of hogs died	3,004
17.	Per cent of hogs died	7.15
18.	Total number well when treated	34,636
19.	Total number died that were well when treated	787
20.	Per cent died that were well when treated	2.27

It will be noted that of 34,636 animals in good health but exposed to contagion from the disease, 787 died after receiving the treatment. This is a loss of only 2.27 per cent, which is regarded as highly gratifying. Of the total number inoculated (41,979 hogs) 3,004 died, or a percentage of 7.15. It must be remembered, however, that the serum is to be regarded in the light of a preventive rather than a cure, and it is probable that many agents inoculated animals in which the disease was so far advanced that there was little hope of their being saved.

In addition to the treatment by inoculation, sanitary and other precautions are indispensable. The hogs should be fed on cooling, laxative food for a few days after receiving the treatment, and should be moved to clean, uninfected pens where there is plenty of shade. Care should also be taken to free them from lice and worms, and the following remedy for worms is suggested by the Kentucky experiment station:

Santonin	grains	2½
Areca nut	dram	1
Calomel	grain	1
Sodium carbonate	dram	1

This dose is for 100 pounds of live weight. It should be given on an empty stomach, preferably in the evening in slop, after the hogs have been without food for 12 to 24 hours. On the following morning, each hog should receive a tablespoonful of Epsom salts.

THREE-CORNERED ALFALFA HOPPER A MENACE.

During the present month several complaints have been received by the department from the alfalfa-growing sections of southern Virginia of serious injury to alfalfa by an insect depredator which girdles the stems of the plants. These injuries have proved to be the work of the three-cornered alfalfa hopper. This is a small, yellowish-green insect which obtains its food by sucking the sap of the plants attacked and therefore can not be poisoned with arsenical sprays. It punctures the stems of the affected plant in such a manner as to cause girdling, thus depriving it of nourishment and causing it to become yellow and die off above the girdled area.

The adult insects pass the winter in a more or less dormant condition, under bunches of wild grass, dead leaves, brush, weeds, etc., in the latitude of southern Virginia, but may remain active most of the winter in the extreme southern portion of the affected territory. The eggs are deposited in the stems of the plants behind leaf sheaths and sometimes at the surface of the soil, during the first warm days of spring, in southern Virginia, but as early as February in Arizona, and southern California.

The life cycle from egg to adult occupies, roughly speaking, from 50 to 60 days. Thus in the latitude of southern Virginia there are probably two annual broods, but in southern Arizona and California as

many as four broods may occur. The territory mainly affected by the insect may be roughly indicated as all that portion of the country south of latitude 35°, although the insect occurs throughout almost the entire country excepting the Rocky Mountains and Cascade Range plateaus. It feeds upon many plants, chiefly those of the bean family, but is mainly injurious to alfalfa, clover, and cowpea.

The chief means of controlling the three-cornered alfalfa hopper is by destroying its hibernating places. Thus, all bunches of rye and other wild grasses, weeds, brush, rubbish, etc., in or about affected fields, in fence corners, along ditch banks, should be burned or otherwise destroyed during the fall or winter months, after the insects have ceased feeding and have become dormant. Pasturing affected fields, where practicable, has been found beneficial. Harvesting affected alfalfa immediately after egg laying has occurred will also probably prove somewhat effective.

The local outbreak in Virginia is probably due to the peculiar meteorological conditions prevailing during the past year. A mild, short winter was followed by an unusually hot, dry summer, both of which conditions favored the extreme multiplication of the species.

INEXPERIENCED GROWERS OF DRUG PLANTS NOT LIKELY TO SUCCEED.

The cessation of the harvesting and shipping of many crude drugs because of hostilities in Europe has caused a sharp advance in their market price. As a result many individuals and firms have written the department inquiring about the possibilities of the American farmer growing drug plants profitably. The department's specialist in charge of drug-plant investigations has written a number of these correspondents that, although it is probable that a number of important drug plants could be grown profitably here if the present high prices continue, nevertheless there is a possibility of the early restoration of shipping facilities, and in any event the inexperienced grower of drug plants would be more liable to meet with failure than with success.

Some medicinal plants, says the department's specialist, may be grown as easily as ordinary garden crops; others, however, require the special knowledge and skill of the practiced gardener. There are many varying factors in the commercial production of drug plants. The constituents of many of them vary in quantity according to the time of gathering and method of drying, and a knowledge of proper methods of harvesting and curing is absolutely essential for the production of drugs of high quality.

Even if the prospective grower possessed some knowledge of drug plants, beginning now, he could scarcely hope to harvest a crop before the late summer of 1915. In the case of some varieties he might even have to wait until the end of the second or third year after planting. Therefore, the farmer who began at once might not find himself with a supply of crude drugs on hand until after prices had returned to their former level.

In any case, the quantity of crude drugs required by the market is relatively small as compared with fruits, vegetables, or staple crops. Therefore, numerous or extensive plantings by individuals throughout the country might easily result in overproduction, which would cause a decline in the market price independent of the conditions abroad.

For successful production of drug plants on a commercial scale there must be an available market. Its accessibility must be considered above all things by the successful grower. The cost of production must be carefully estimated and to this must be added the cost of packing and shipping to this market. The packing and shipping expenses might easily make the enterprise unprofitable.

Drug plants to be profitably grown should yield returns at least equal to those from other crops which may be grown on the same land. The farmer must determine that this is the case. The fact that much hand work is necessary in the production of most drugs is liable to make the cost of labor high.

MANY DRUG PLANTS WILL NOT GROW HERE.

Among the inquiries regarding drug plants addressed to the department have been requests regarding plants which can not be produced in this country at all. Others that might be grown here are also produced in South America and other localities not involved in the war, where they can still be produced more cheaply than here.

There are, nevertheless, certain drug plants now produced chiefly in Europe which under suitable conditions may be grown in parts of the United States. Among these are the following:

Althea.	Conium.	Henbane.
Anise.	Coriander.	Horehound.
Belladonna.	Dandelion.	Marjoram.
Burdock.	Digitalis.	Sage.
Calamus.	Elecampane.	Thyme.
Caraway.	Fennel.	Valerian.

Seeds of many of these plants may be obtained from the large seed houses. Even the above-mentioned, however, need peculiar conditions in order to thrive, for drug plants vary widely in their relations to soil and climate. Satisfactory yields can only be expected when the requirements of these plants are understood and met.

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UNITED STATES DEPARTMENT OF AGRICULTURE

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APPLE GROWERS STRONGLY ADVISED TO USE COLD STORAGE.

In view of the interference with the European market and the large production of American apples this season, specialists of the department call the attention of apple growers to the advantages of cold storage for steadying the market at harvest and for lengthening the selling period.

Glutting of the market will result, it is feared, in many thousands of barrels of good apples rotting in the orchard or being disposed of at prices which figure a net loss to the grower.

The following are the directions given by the apple-handling specialists of the department for using cold storage successfully in handling apples:

The proper function of cold storage is to retard the ripening processes of the fruit and the development of decay organisms and skin blemishes. The first responsibility for the keeping quality of his fruit rests with the grower, since it is his growing and handling methods that largely determine its vitality, freedom from disease, and general condition when stored. Cold storage is not a remedy or a restorative for poorly developed, weak, imperfect fruit, but is the most effective method of preserving the quality, flavor, and appearance possessed by the fruit at time of picking.

The first step in successful cold storage of apples has been found to lie in the practice of such cultural, spraying, and pruning methods as insure production of sound, healthy, well-colored fruit, free from disease. Assuming this as the first requisite, the following factors have been found to most influence the keeping quality of the fruit and furnish best conditions for long storage:

1. Proper maturity at time of picking.
2. Care in all handling operations.
3. Prompt storage after picking.
4. A proper storage temperature.

Careful and extensive investigations have demonstrated that fruit picked at full maturity can be held for a longer period in storage, and is less affected by scald and decay than that picked when somewhat immature. Two important commercial varieties, Rome Beauty and Winesap, have been found to be especially susceptible to scald during storage, if picked prematurely. There is no doubt that several thousand dollars are lost to the industry each year through the improper picking of these two varieties alone. The results emphasize strongly that more care and attention should be paid to this detail of the harvesting operations than is usually the case.

By full maturity, however, is not meant over-maturity, which may cause fully as heavy losses as immaturity. Each grower should study his own fruit and his own conditions in order to determine the proper picking stage. Probably the most reliable single indication of maturity is the whitening or slight yellowing of the "ground color" of the fruit. This is the color underlying the blush or red color and should not be confused with the latter.

CAREFUL HANDLING.

Care in all handling operations is the second important requisite of successful storage. A class of fungi, of which the common blue mold is an example, are known to be unable to attack and cause decay of healthy, uninjured fruit. In spite of this fact, very serious rots, both in storage and in transit to market, are the work of fungi of this type, and the largest contributory cause in all cases is bruising or skin breaking suffered by the fruit in the picking and packing operations. Microscopic bruises and breaks in the skin are large enough to afford entrance to the spores of these fungi, and the necessity for the utmost care in all operations connected with the handling of the fruit to avoid bruising and mechanical injuries is more urgent than most growers realize.

PROMPT STORAGE.

There is a marked difference in condition between fruit stored promptly after picking, say not more than two days later, and otherwise comparable lots of which the storage is delayed 10 days or 2 weeks. Such delay is especially injurious during a period of warm, humid weather. The delayed fruit at withdrawal from storage is riper, yellower, and duller than the corresponding "immediate" stored fruit, and in addition develops more serious scald and decay. The importance of eliminating all avoidable delay in storing can not be too strongly emphasized.

STORAGE TEMPERATURES.

31° to 32° F. is the standard storage temperature for apples, and this has been found to be the best for long keeping of the fruit. Higher temperatures permit the ripening of the fruit to advance more rapidly than at 31° to 32° F., with the result that the fruit at these temperatures reached the end of its storage life much sooner. In addition, the lower temperature

retards most effectively the development of fungous decays and skin blemishes. For a short storage period higher temperatures may be used without serious trouble, especially with the better keeping varieties, but for long keeping 31° to 32° F. will best maintain the color, quality, and texture of the fruit.

Apples should be withdrawn from storage while still firm, and in this condition can be held on the market in satisfactory shape for several days or weeks. If allowed to become excessively overripe in storage, however, they will break down very fast on withdrawal. Apples from 32° F. will as a rule hold in better condition after withdrawal from storage than will comparable lots from higher temperatures.

AMERICAN CHEESES SHOULD BE MADE POPULAR.

American cheese makers should take advantage of the present excellent opportunity to establish a reputation for their products that will outlive the present disturbance in international commerce. European cheeses have long been popular in this country, and it is a popular belief that they can not be equaled by the domestic product. For example, in the fiscal year ending June 30 a total of 63,784,313 pounds of cheese were imported into this country. It is not yet possible to say to what extent this trade will be interfered with by the war, but it is certain that the imports for the current year will be much less than they have been in the past.

There is no reason why some of this deficiency can not be made good at home if the farmers will furnish the milk. Already American cheeses have been made which rank, in the opinion of experts, fully as high as foreign cheeses of the same class. The popular preference for the imported products, however, has hitherto prevented these cheeses from selling on their own merits in competition with European produce.

One of the most striking instances of this is Limberger cheese. In quality and price American cheese of the Limberger type long ago drove its foreign rival out of the market. Practically no foreign Limberger has been imported into this country for many years. Many consumers, however, have clung to the belief that they were eating a foreign cheese. There is no reason at all why they should not now know that the American product is exactly as good as the foreign. Moreover, now that some of the more expensive types of highly flavored foreign cheeses are not likely to reach us for a long time, the demand for domestic Limburger should be greatly increased. The market thus created should remain a good one long after the present conditions have been remedied; for once the consumer becomes accustomed to the American product he is not likely to abandon it for a more expensive foreign one which is no more satisfactory.

Much the same is true of cheeses of the kind popularly described as Swiss. Cheese of this variety is made exactly as well at home as abroad. In the past, it is true, American makers have been confronted by several difficulties, but Government investigations have solved many of these problems and it is now possible for expert cheese makers to turn out Swiss cheese of uniformly high quality.

Camembert has been made in America with some success already. This variety has suffered more, however, from actual opposition by the promoter of the imported article than other kinds. Camembert is ripened quickly and reaches the consumer within a month of manufacture. This is, therefore, an opportunity for the American maker freed from competition to sell his article and by the fuller opportunity to work his factory, to perfect his method to such a degree as to hold that market when competition returns. Though more perishable than Cheddar, Swiss and some other varieties, this should not prove to be a serious obstacle to increasing the output, for Camembert of the best quality always commands a good price.

In addition to Camembert, there are a number of other fancy foreign cheeses which are popular here and which could doubtless be imitated successfully by American cheese makers after a little experimental work. Among these varieties are Edam, Gouda, Parmesan, Roquefort, Stilton, and Gorgonzola. Although there seems to be no reason why such cheeses should not be made in the United States, they do not, in the opinion of experts, offer at the present time the most promising field for American cheese makers. For the present, at least, it would probably be better for them to encourage the demand for standard types, such as Cheddar, Swiss, Limburger, pineapple, etc. The field for Cheddar is particularly promising because of the fact that the flavor of this cheese, while always distinctive, can, nevertheless, be made to vary widely. This variation enables it to act as a substitute for a number of other varieties. In short, the experts in the department are confident that with care and foresight at the present time the American producers will do much to place American cheeses on a permanent equality with the European varieties and sweep away a prejudice that has held back the industry in the past.

As long as the general public believes that the imported product is necessarily the best, the tendency on the part of the American manufacturer is inevitably to turn out goods that will sell because of their low price, not because of their high quality.

The best way to remedy this condition of affairs and to make friends for domestic cheeses of foreign type is for American makers to label their products frankly as American goods. This will give the consumers an opportunity to compare our best home-made products with the imported article. The result will be the removal of a long-standing prejudice and an added incentive for manufacturers to improve the quality of their products. It is thought that this

can be done and the price still kept below that necessarily demanded for imported cheese. But any temporary advantage gained by the present situation can not be maintained unless American cheese makers work for quality of their products. Eventually, they will again be obliged to compete with Europeans, who for generations have looked upon cheese making as a fine art.

FORM APPLE CLUBS.

Now is the time to form apple clubs, and the department in cooperation with the agricultural colleges of northern and western States is interesting the boys and girls of apple-growing sections in the possibilities of apple culture as a profitable and pleasurable occupation. The organizations for the young people on the farm are being planned and begun in the New England States, New York, New Jersey, Delaware, Pennsylvania, Michigan, Ohio, Idaho, Montana, Oregon, and Washington. Any young people in these States wishing to find out the details of the new apple-raising clubs should write at once to the State agent in charge of club work at the State college of agriculture, or the United States Department of Agriculture, Washington, D. C.

The new clubs will be organized on the same lines as are those for the encouragement of potato, corn, and alfalfa growing, gardening and canning, and poultry raising. Members must be not under 10 nor over 18 years old. Each of the club members will be allotted not less than 10 apple trees, 6 or more years old, in the same orchard (and all in one row or block if possible) of which he will have the exclusive care for one year. Each club must have at least 5 members, and these will be under the instruction of a local leader who will receive instructions from the State leader in charge or the county agent. Following these instructions the young member who knows nothing about apple raising will learn to pick, grade, crate, and market apples; also to can and label fruit for exhibition and for sale. The instructions will aim to show each of these young people how he may get the maximum results from his 10 trees with the minimum expenditure of labor.

As in the other clubs for boys and girls cooperating with the department, practical prizes will be awarded by local fairs and interested people to those who excel. The best prize, however, will be experience and a net profit on investment to each member.

Club agents are already at work making enrollments for the new apple clubs. During October and November the plats will be selected and assigned to the individual members, and the trees will be marked to show to whom they are assigned. As soon as the present apple crop is gathered, preparations will begin at once for the next year. Some trees may need fall pruning, cleaning out, and mulching. These details will be attended to, and the young people may be instructed in the best methods.

During the winter interest will be kept up through the local club organizations and meetings. The leaders will visit the plats of each of the members to give specific instruction. Early in the spring records will be in order and each club member will be shown how he may keep a simple account of the progress of his row of trees. During the next summer vacation the work will be at its height, and the boys and girls who are persevering will not only learn much valuable information but may make a substantial profit on the time and labor they have invested.

Fall will be the occasion of apple-club fairs and festivals. At these events there will be exhibits of all kinds of apples and apple machinery, devices used for handling both fresh and cooked apples, of food products prepared from apples, of canning equipment, crates, and barrels. Demonstrations will be given at these festivals of how to pare and core apples, how to can "useless" windfall apples, how to make apple jellies, butter, and pickles; how to grade, crate, and pack apples, etc.

In awarding the prizes for the year many features will be considered; how the trees are pruned, whether they are free from blight and plant lice, how the soil has been worked, the size, color, and condition of the fruit, and methods of packing will all count in the final reckoning. One of the most important considerations is how much profit the club member has netted from his investment. In the last analysis that is the final test of his success.

It is hoped that the organization of apple clubs will show the younger generation how apple culture may be relieved of much of its drudgery. Both profit and pleasure may be derived from such an organization, where properly directed intelligence and enthusiasm and a systematic study of orchard problems as they arise will tend to secure the best results.

SUDAN GRASS A USEFUL CROP.

Specialists in the department are now devoting considerable attention to the introduction of Sudan grass as a valuable addition to the forage crops of many sections. Sudan grass is an annual, related to Johnson grass, but distinguished from it by the absence of rootstocks and by broader and more numerous leaves. When seeded broadcast or in drills it averages about 3 to 5 feet in height, but when grown in rows and cultivated this can be increased to 6 to 9 feet. The hay of the cultivated crop, however, is somewhat coarser and not so desirable for market purposes.

A hay grass that will do well in the South has been much sought for, and it is believed that Sudan grass should fill this want. It is known to be palatable and analysis shows that in chemical composition it is practically the equivalent of Johnson grass and timothy hay. As a soiling crop it has the advantages of

making a large yield and being well relished by animals when in the green state. Under irrigation, indeed, its growth is so rapid and the recovery from cutting so prompt that the yields are really enormous. Where rainfall is adequate or irrigation possible a small area will therefore support a very fair number of animals.

The value of Sudan grass is by no means confined to the South. In the central Great Plains south of North Dakota it promises to become one of their most important hay crops, and in latitudes between those of southern New York and northern Tennessee it will replace to a great extent the millets as catch crops.

In the high altitudes of the intermountain section, however, its possibilities are not considered so great, for continued cool weather is detrimental to its growth. Humid atmosphere and continuous heat is also an undesirable combination, since it favors the development of "Red spot" (Sorghum blight), which greatly reduces the yield. For this reason there may be some difficulty in growing Sudan grass satisfactorily on the Gulf and in some sections on the Atlantic coast of the southeastern States.

The yields to be expected from Sudan grass naturally vary quite a little in accordance with the section where it is grown. Under ordinary circumstances the total yields range from 1 to 8 tons cured hay per acre, depending largely on the number of cuttings that are possible. In the central Great Plains two are not unusual, and farther south three, and in some cases even four are possible. Drought naturally reduces the yields, but nevertheless 5 tons to an acre were raised in parts of South Dakota and southern Minnesota in the face of the exceptionally severe summer of 1913. In the South, under similar conditions of severe drought, Sudan grass has been found to do better than the millets and sorghums.

In addition to its value as a soiling crop and as hay, Sudan grass can be grown with cowpeas or soy beans and made into excellent silage. Its exact value for this purpose, however, has not been so thoroughly tested.

Since this crop is not yet very generally grown, prices for seed are high, in some cases $3 per pound being quoted last year. Increase in production, however, should result before long in very much lower prices. During the past year the department has distributed small quantities of seed to over 5,500 people, including farmers in all parts of the United States. Besides this general distribution there are numerous persons in both the Northern and Southern States who received seed in 1913, and realizing the profit to be made in seed production, planted considerable acreages this year which they are harvesting entirely for seed. Probably 50 per cent of the total amount of seed will be produced in Texas this year, where it is being grown under the strict rules of the Texas Experiment Association, an organization of farmers under the guidance of the State experiment station. These many small growers in Texas and other States should be able to supply seed to all who desire it. The Department of Agriculture will gladly furnish the names of growers and seedsmen to anyone who desires to purchase seed.

From 16 to 24 pounds are required per acre of broadcast sowing and from 2 to 6 pounds for seeding in rows. Prospective growers are cautioned that Sudan grass seed resembles Johnson grass seed so closely that they will find it advisable to select seed grown north of the Johnson grass area.

From April 1 to April 15 is the best time for seeding in the extreme South; in the latitude of northern Texas, Oklahoma, and Kansas, from April 15 to May 15; and in the latitudes of Nebraska and South Dakota, from May 1 to June 1. A rather firm seed bed is desirable. When the seed is drilled or sown broadcast, the ground should be plowed in the spring and harrowed as for corn. In semiarid regions it is advisable to seed the grass in rows sufficiently far apart to allow of cultivation, and in growing for seed this should be done in all sections, whether arid or not.

Seed growers will find the harvesting of Sudan grass easy. The seed is produced freely and high above the ground, and the loss from shattering is slight. Under ordinary conditions from 450 to 1,400 pounds can be obtained per acre, and under irrigation this yield is largely increased.

Fuller information in regard to the crop is contained in Farmers' Bulletin No. 605, which will be sent free on application to the Division of Publications while the department's supply lasts.

MISSISSIPPI AND LOUISIANA BREAK RECORDS IN TICK ERADICATION.

Lauderdale County, Miss., and Tensas Parish, La., have been released from quarantine for Texas fever tick, as part of nearly 7,000 square miles of southern territory which had been freed from this pest. It seems that both of these counties made unusual progress in getting rid of the tick and so putting themselves in a position where their cattle could be shipped to market without quarantine restrictions, and also where they can safely import northern cattle for breeding or dairy purposes.

Lauderdale County began tick eradication in earnest on April 1, 1914, and through the active cooperation of the local and Federal authorities have succeeded in ridding the county of this costly and dangerous pest in five months.

In Tensas Parish the police jury appropriated $6,200 for tick eradication work in January, 1914. The building of cattle-dipping vats was commenced in February, and early in April active dipping of cattle was inaugurated. Federal, State, and county authorities and individual cattle owners cooperated harmoniously, so that Tensas Parish also joined the white area this fall.

The success of these two quick, intensive campaigns has stimulated cattle owners in other counties to consider similar plans in their own neighborhoods, and it is believed that the coming year will see unusual activity in these two States in extending the territory that is free from the expensive and troublesome quarantine restrictions.

To help those who are individually interested in dipping cattle to eradicate the tick, the department has prepared special bulletins on the dipping of cattle and the preparation of arsenical dips, which will be sent free to all who apply for Farmers' Bulletins Nos. 498 and 603.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1914

Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

VOL. II WASHINGTON, D. C., OCTOBER 21, 1914 No. 11

OCT 23 1914

WILL POULTRY PACKING BECOME AS CENTRALIZED AS IS THE MEAT INDUSTRY?

Unless chicken raisers give their encouragement and support to local poultry-packing establishments there is danger, poultry specialists of the department feel, that the poultry industry will become as highly centralized as the beef industry in a few distant packing centers. In this event, just as the farmer with a few beef cattle to dispose of has to seek a market several hundred miles away or deal through the local commission man or agent who will buy live cattle, chicken raisers, unless local poultry-dressing and refrigerating establishments are maintained, will have to dispose of their product for live shipment to Chicago and other centers.

There are indications that the same evolution which finally did away with the local slaughterhouse, and in large part with the local butcher who killed for his own or near-by trade, may be at work to centralize all final handling of chickens for the great markets in big cities many hundred of miles away from the productive field. In this event, of course, the farmer would no longer have the stabilized competition for chickens between the local or near-by poultry packing establishments and those who buy to ship live to Chicago and other cities.

With the exception of a small percentage of live poultry taken up by those whose religious scruples require them to eat freshly killed chickens, ducks, and geese—and these shipments for religious purposes always must continue in competition with local and other dressed-poultry establishments—the bulk of live poultry shipped into Chicago and other sections is there killed and dressed and put on the market as dressed poultry. The poultry specialists believe that the poultry supply of large cities must come from shipments of poultry already dressed, and that as time goes on an increasing percentage of such poultry will be shipped in dressed form, while live shipments will gradually be limited to poultry needed for religious or special uses. The reason for this is that they believe that to give the cities the best dressed poultry local poultry-packing establishments in the producing sections should be encouraged, for the reason that the nearer to the farm the live chicken is properly killed, chilled, and packed the better will be its condition as poultry on arrival at the great market centers.

From the point of view of the consumer, the present tendency to ship live poultry long distances by rail is decidedly wasteful in actual food and in the cost of handling and shipping poultry in this form. Poultry shipped alive 400 or 500 miles, even under the best conditions of feeding in transit, loses an important percentage of weight, amounting in some cases to as much as 30 per cent. Chickens that have traveled long distances by rail reach the killing center in a much worse condition than live poultry which is simply sent a few miles to a local poultry-packing establishment. In the latter case chickens arrive at the poultry-packing establishment practically in farm condition and there are fed from a few days to two weeks, with a resulting increase rather than a decrease in weight. They are killed when they are in prime condition.

The local poultry packing establishment has been proved, in certain districts, moreover, to have a decided influence on the standard of poultry in that neighborhood. In some cases the local packing establishments have vastly improved the general breed of chickens by inducing farmers to replace mongrels by utility breeds which command fancy prices as dressed poultry in eastern markets.

The department specialists, therefore, are encouraging dressed-poultry men not to centralize their killing establishments, and instead of erecting one plant worth $30,000, to draw from a territory with a big radius, are advising them to build instead three $10,000 packing plants in three different centers, each looking to a supply from a territory with a smaller radius that assures arrival of live chickens in excellent condition. Under this plan the poultry packed and shipped is not only in better condition, the experts believe, but in addition, the three districts benefit by the investment and permanent location of an industry, and these industries in turn react favorably on poultry production in that territory.

At the same time, the department urges every local poultry packing establishment to install mechanical refrigeration, buy poultry on a quality basis, and thereby, by price and example, stimulate local poultry raisers to introduce first-class utility breeds.

CIVIL-SERVICE EXAMINATION FOR CROP-REPORTING FIELD AGENTS.

An examination will be held on November 4 to secure eligibles for appointment as field agents, at $1,608 per annum, in the Bureau of Crop Estimates, for the States of North Carolina, Florida, West Virginia, Kentucky, Tennessee, and Arkansas. This

examination will be open to citizens of the States of Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Louisiana, Texas, Oklahoma, and Arkansas.

Applicants are required to present satisfactory evidence of at least five years' practical experience in farming, and (*a*) an educational training equivalent to a four-year course in a college or university of recognized standing, or (*b*) at least three years' responsible practical experience in work involving statistical methods or statistical inquiry, or (*c*) experience as a State statistical agent in the Department of Agriculture.

The examination will consist of questions designed to test the candidate's practical knowledge of agriculture, arithmetic, statistical rules and methods, crop-reporting methods, and his general education and experience. Competitors possessing exceptional practical agricultural experience or agricultural education will receive additional credit. Applicants must have reached their twenty-fifth birthday.

Field agents are required to travel the greater part of their time, personally observing and making inquiries concerning crop conditions, and to collect data by correspondence. Well-educated men of broad experience and familiarity with crop conditions are desired.

Those desiring to take this examination should apply to the United States Civil Service Commission, Washington, D. C., for information as to places of holding the examination in the different States and for the necessary application blanks.

FEED COTTONSEED MEAL TO BEEF CATTLE.

Because of the abundant supply of cottonseed meal that there is likely to be in this country this year specialists in the department believe that the farmer has a better opportunity to make money by feeding beef cattle than for some years past. The feeding value of cottonseed meal has been recognized by agricultural authorities for some time and large quantities of it are exported annually to Europe where the farmers, especially those in Denmark, are also aware of its usefulness. It now seems likely that the price of cottonseed meal will continue to be considerably lower than in recent years, and the American farmer should therefore utilize it to advantage to make cheap gains.

Two causes combine to lower the price of cottonseed by-products. In the first place, the cotton crop in the South this year is good, and in the next the foreign markets have been seriously interfered with by the European war. It is estimated that this year 15,000,000 bales of cotton will be produced in the United States. This should yield 6,680,000 tons of seed. All of this, of course, will not be crushed, but if last year's proportions hold good again about 2,000,000 tons of cottonseed meal will be available. Last year approximately 400,000 tons were sent abroad. Under present conditions it is not probable that anything like this quantity will be exported this year, and, as the cotton crop is larger than before, it is safe to assume that the quantity of cottonseed meal on the home market will be 500,000 tons more than last year. This situation has already resulted in a substantial drop in the price of cottonseed by-products. Cottonseed meal can now be bought in the South at prices ranging from $22 to $24 per ton instead of $27 to $31 demanded last year. An even greater decrease has taken place in the price of cottonseed hulls, which are now selling at from $4.50 to $5.50 a ton instead of $7 to $9 a ton.

At these prices cottonseed meal is approximately $15 per ton cheaper than linseed meal, and in addition its feeding value is a trifle higher. It seems obvious, therefore, that the cattle feeder all over the country should utilize cottonseed meal to a far greater extent than he has done in the past.

This meal is very rich in protein, and it is usually considered that its feeding value is at least twice that of corn. In other words, 1 pound of cottonseed meal is equal to 2 pounds of corn for feeding cattle. A small portion of cottonseed meal has an even greater relative value where the ration would otherwise be composed entirely of feeds high in carbohydrates, such as corn, corn stover, and timothy hay. This is extremely important to cattle feeders throughout the corn belt and other States where much corn is fed. In Indiana, for example, it was found that the addition of 1 pound of cottonseed meal to a ration of corn and clover hay resulted in a saving of 1.37 pounds of corn and 1.41 pounds of clover hay. This means that if corn was worth 70 cents a bushel and clover hay $15 a ton, each ton of cottonseed meal fed the cattle saved the farmer $55.40 worth of other feed. With cottonseed meal at $24 a ton this is a net saving of $31.40, a saving well worth while.

As a matter of fact, cottonseed meal has been the principal concentrate fed to cattle in the South for years. In experiments conducted by the Bureau of Animal Industry it was found that with this as the only concentrated feed gains could be made on steers very economically; 350 pounds of meal often produced as much as 100 pounds of gain. When fed judiciously 6 pounds of cottonseed meal a day for a period of 100 to 120 days does not prove harmful to mature steers. If the steers are to be fed for a longer period, however, the amount fed should not be more than 4 pounds a day. For wintering cattle it is hard to find a better or more economical ration than silage combined with 2 to 3 pounds of cottonseed meal and a little fodder or stover. Mature cattle can be wintered on a ration of 30 pounds of silage, 2 pounds of cottonseed meal, and about 5 pounds of some dry roughage. On such

a ration steers will pass through the winter in exceedingly good condition, and even gain something in live weight.

But in addition to its feeding value the fertilizing value of cottonseed meal is very high—so high, indeed, that often the fertilizing constituents in the meal are alone worth as much as or more than it now costs. When it is remembered that from 80 to 90 per cent of this fertilizing value remains in the manure, the opportunities for profit that its use offers become even more obvious. To put the case in another way: When one includes in his calculations the enrichment of the land, he finds that feeding cottonseed meal to cattle costs him only from 10 to 20 per cent of the market price of the meal.

In view of these facts, specialists in the department recommend cattle feeders in all parts of the country to secure prices on cottonseed by-products and to take advantage of the cheap foods that they provide. No other form of concentrated feed, the specialists say, will prove as profitable as cottonseed meal this year. In the South the feeders have an opportunity to get these by-products at lower prices than at any other time during the last 10 years. Combined with farm-grown feeds, such as corn silage, they should be able to secure gains very cheaply and, with the present high prices for finished cattle, make good profits. Incidentally it may be said that if such a movement tends to strengthen and steady the market for cottonseed by-products, this will in itself be of considerable assistance to cotton growers in the South.

WOOD ASHES IF STORED AND KEPT DRY MAY FURNISH A VALUABLE SOURCE OF POTASH.

If the European war should cause our large annual imports of potash to dwindle, many farmers will look to wood ashes, among other substances, to replenish the potash supply. While the amount of wood ashes that a farmer could accumulate on his own farm would hardly ever be sufficient to supply his need for potash, nevertheless, if they are carefully stored and not permitted to leach, they may be of considerable value to him. Wood ashes are now a factor in Canada, being considered a regular commercial commodity, and the large lumber mills and other plants using wood or sawdust for fuel in this country which at present make no use of the ashes from their furnaces or waste piles may find it profitable to store and sell them if the demand warrant it.

Wood ashes may be profitably applied as a top dressing to grass land and to pastures, where they will encourage the growth of clover and better kinds of grasses, which will then crowd out inferior kinds and weeds. Wood ashes may be also used for corn and roots. Because of their lime content they are not so good for potatoes, although sometimes used for this crop.

In New England, where farmers have had to look more carefully to the renewing of old soils than in some of the newer sections of the country, wood ashes have long been appreciated. Ashes indirectly increase the available nitrogen of the organic matter in the soil, and have been known to do excellent service in Europe on drained moorland.

Besides the potash, ashes contain other ingredients which are of value to plants namely, about 1 or 2 per cent of phosphoric acid, a little magnesia, and a great deal of lime. The importance of these last-named elements is made plain by the esteem in which leached ashes are held by some of our farmers, although from leached ashes all but a very small portion of the potash has been washed out. The farmer who wishes to restore potash to the soil by the use of ashes should take great care that they are kept dry and are not allowed to leach at all. Many housewives save their house ashes and leach out the potash for use in making soap. They may now have an additional reason for conserving them, namely, their increased value as a garden fertilizer. But as has just been said, ashes to be used for the improvement of the soil should not be permitted to leach.

Ashes from hardwoods (deciduous trees) are richer in both phosphorus and potash than those from pines and other softwoods (conifers). Ashes from oak, elm, maple, and hickory have more potash than those from pine. The ashes of twigs (faggots for example) are worth more for agricultural purposes than the ashes of heartwood taken from the middle of an old tree. In general, the smaller and younger the wood burned, the better ashes. The ashes of coal do not contain enough potash to make them valuable in this connection.

Ordinary house ashes contain on the average about 8 or 9 per cent of potash and 2 per cent of phosphoric acid. Investigators have considered that there is enough potash and phosphoric acid in a bushel of ashes to make it worth 20 or 25 cents. Besides that, some 10 or 15 cents additional might be allowed for the "alkali power" of the ashes. This power is that which enables ashes to rot weeds and to ferment peat. Of course, prices vary with local conditions.

If wood ashes are purchased, the farmer should assure himself that they have neither been contaminated with coal ashes nor adulterated with leached ashes. With these facts determined, the place of burning has no effect on the value of the ashes as fertilizer. They are equally satisfactory whether taken from a stove, a fireplace, or a bonfire.

POTASH IN THE ASHES OF COTTONSEED HULLS.

The hulls of cotton seed, according to specialists, yield ashes which contain from 18 to 30 per cent of potash and from 5 to 10 per cent of phosphoric acid. Cotton-hull ashes, therefore, as a fertilizer are much more concentrated than ordinary wood ashes. As a matter of fact, in the opinion of some investigators, the ashes from cottonseed hulls contain such a large proportion of potash that they might do considerable harm to crops if they were used in large quantities.

These ashes have been used with advantage for manuring tobacco. They have in times past brought as much as $35 or $40 a ton in New England. One objection to the use of these ashes is their liability to vary widely in composition. This lack of uniformity is due to the fact that they are burned as fuel at the oil factories in conjunction with wood or coal. Those lightest in color have been considered the richest in potash by certain investigators.

A subsequent article will deal with methods of thinning a wood lot in such a manner that the trees left will be benefited by the thinning and the material removed may be used for firewood, the ashes of which will furnish valuable potash.

COTTON FARMERS URGED TO GROW THEIR OWN FOOD.

In a circular sent out to farmers and business men in the cotton States, the department offers a series of suggestions to remedy the situation created by the falling off in the demand for cotton. Instead of attempting to obtain through cotton the cash required to buy other necessities, farmers are urged to raise these necessities themselves. Cotton is low and likely to remain so. Food products are high and also likely to remain so. A man, therefore, who has all his acreage in cotton finds himself compelled to exchange a low-priced article for a high-priced one. This is not profitable.

One way within the reach of all to cut down expenses is to pay proper attention to a home-grown garden. A piece of good land, as near the house as possible, should be devoted to this; given extra care and well supplied with manure. In return the farmer will have an abundance of good wholesome food throughout a large portion of the year which will cost him little or nothing in cash. Vegetables and fruits should be canned for winter use. In this connection it is pointed out that summer is not the only time that work can be advantageously put into a garden. Farmers are advised, therefore, to get in touch at once, either with the county agents or with the State and Federal Departments of Agriculture if they wish any information on this matter.

In addition to garden truck, every farmer should grow his own corn, hay, and forage crop and keep enough chickens and hogs to supply his table with at least the bulk of its meat. Few farmers, in the cotton States at least, keep enough chickens. The profits that may or may not be made out of the poultry business have little to do with the fact that with some care a sufficiently large flock of chickens can be kept on the farm to supply the family with eggs and much of its meat. Hogs, too, can easily be raised for home consumption, and beef cattle as well.

Again, farmers can economize in the use of fertilizers. It is the poorest possible economy to starve the land; but there are other ways of feeding it than by buying high-priced manures and commercial fertilizers. Crops of such leguminous plants as crimson clover, vetch, or other winter legumes, or if seed for these can not be obtained at a reasonable price, oats, rye, peas, or beans add greatly to the fertility of the soil when they are plowed under. A certain amount of commercial fertilizer, of course, may be necessary, but the farmer should ascertain carefully how much and what kind his land really requires. Above all, all the farm manure should be carefully saved and distributed over the land.

It is obvious that if the farmer follows this advice he will plant less cotton. Much of the acreage that he has in the past devoted to this cash crop will now be required to produce food crops. This is precisely the result that is desired. It is probable that some millions of bales of cotton will have to be carried over from this year's crop. If there is no decrease in the cotton acreage and no increase in the quantity of food products raised, the price of cotton must necessarily continue to be low and the cost of living high. This condition is at the bottom of the demand that some means be found to restrict the cotton acreage in the coming year. Experience, however, has shown that such movements result not in a decrease but in an actual increase. Each man believes that his neighbors will plant less cotton and that the price will consequently go up. He determines, therefore, to take advantage of this by planting all the cotton he can. On the other hand, specialists in the Department of Agriculture believe that if the real value of diversified farming be once thoroughly understood the cotton acreage will be reduced in a natural and healthy manner.

The same general principle can be applied to the tobacco crop. "Diversification," says the circular, "and the production of home supplies is the only safe plan to follow." Landlords are urged to see that their tenants follow this plan, and bankers and merchants to cooperate by furnishing the credit which may be necessary to enable farmers to place themselves on the sound financial basis that diversified farming will ultimately bring.

CORN LESSONS FOR COUNTRY SCHOOLS.

For the benefit of children in rural schools suggestions for a series of lessons on corn are about to be issued by the department. The average production per acre of corn in the United States is still below 28 bushels per acre despite the fact that in almost every section of the country yields of more than 100 bushels have been obtained. The difference indicates in a measure the value of proper instruction in growing corn. The spread of boys' corn clubs all over the country has also emphasized the need of corn study in rural schools.

The forthcoming bulletin contains outlines of 12 lessons covering such important points as the different kinds of corn, ways of judging corn, seed, corn-crop rotation, best kind of fertilizers, proper cultivation, and the food value of the crop. Suggestions for the proper observance of corn day have received consideration. Rural-school teachers, especially in the great corn-growing states, will find the bulletin a valuable aid in the work of stimulating in their charges a healthy interest in sound agriculture.

This bulletin will be published under the title of Farmers' Bulletin No. 617 "School Lessons on Corn," and copies will be sent free as long as the supply lasts.

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Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

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HOW THE FARMER CAN DETECT THE HESSIAN FLY IN HIS WHEAT FIELDS IF IT IS PRESENT.

At this season of the year the Hessian fly begins to make its presence known in the fields of young wheat. The eggs are always laid on the surface of the leaves, and the maggots, as soon as they hatch, make their way down the leaf to a point just above the roots of the young plant. There the young maggots become embedded in the tissue and begin to feed upon the juices of the plant. Very few farmers are able to detect the presence of the Hessian fly in their fields until much later in the season, after the plants have become brown and dead. In the meantime they are likely either to mistake the pest for other insects that may be present in abundance, or to overlook its presence entirely.

The occurrence of the pest may be very easily detected by any farmer provided he understands and observes the difference between infested and uninfested plants. The leaves of an infested wheat plant are always broader and have the appearance of being shorter than those of an uninfested plant, while the

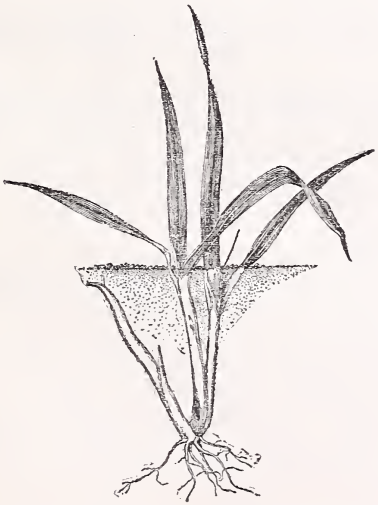

FIG. 1.—Young wheat plant infested by the Hessian fly. Note the absence of tillers or stems above ground and the presence of the pest just above the root beneath the enveloping sheath.

infested leaves are of a much deeper green color, resembling in this respect the leaves of volunteer oats. The rolled central leaf, which indicates the presence of the stem, is always absent, and infested plants stand much more erect in the drill row and do not spread out and cover the ground. It is by this erect habit, broader leaves, and deeper color that either an infested entire plant or a tiller of the same may be easily detected.

In an uninfested plant the leaves are more slender, of a lighter green, and do not stand as erect, but as the tillers are thrown up they spread out and cover the ground. Although they have every appearance of being less vigorous than the infested plant, as a matter of fact they are much more vigorous, while the central unfolding leaf is always present. The difference between the infested and uninfested plants is shown by the illustrations and no farmer need be in the least

FIG. 2.—Healthy wheat plant. The formation of tillers above ground is an indication that the Hessian fly maggot has not attacked the plant.

misled by the appearance of his fields in the fall; neither need he mistake any of the numerous insects that may be found in the fall wheat for the much more destructive pest, the Hessian fly.

Where the darker green wheat plants are excessively abundant or predominate, if the soil is fertile it is a good plan to pasture the fields lightly. The pasturing, however, should be done only during dry weather and preferably by young or light-weight animals. The tramping of the soil will probably crush many of the maggots and thus facilitate infested plants in throwing up fresh tillers, as shown at the left of Figure 1, and these will appear above ground too late to become infested. Surviving the winter, these uninfested tillers will give the fields an increased number of plants in spring while the enemy has been more or less reduced, all of which is, of course, favorable to increased production in the coming crop.

OCT 27 1914 Department of Agriculture

GREEN-MANURE CROPS MUST BE INOCULATED.

Agricultural authorities say that many farmers fail to obtain full benefit from turning under legume crops for green manure because of the lack of root nodules. The chief benefit of legume crops is due to minute soil bacteria which grow in association with the roots of the legume plant and convert the nitrogen of the air into available plant food. Furthermore, with each legume crop is associated its own individual strain of material. For example, the bacteria which grow upon the roots of alfalfa will not develop with the lima bean. In areas over which any particular legume has been grown for a number of years it is generally found that the soil is naturally inoculated, but when nature has not already provided the proper bacteria in the soil artificial inoculation is essential. Introducing new kinds of crops into any locality usually requires the introduction of the proper bacteria for the new legume. This may be accomplished either by scattering soil dug from a field of a well-inoculated crop of the same kind or by moistening the seeds of the legume crop to be planted with a culture of the proper variety of bacteria. The United States Department of Agriculture has cultivated and distributed liquid pure cultures of these beneficial bacteria for several years.

In general it may be said that inoculation presents few difficulties to those who are willing to do work carefully. Whether naturally inoculated soil or artificial cultures should be used depends upon local conditions. When soil is used great care should be exercised to dig it only from fields that are free from objectionable weeds and from serious plant diseases.

NEW BULLETINS ISSUED.

Following are some of the popular titles recently published by the department. These may be obtained free on application to the Editor and Chief, Division of Publications, as long as the department's supply lasts. Thereafter they may be obtained by sending coin or money order to the amount stated to the superintendent of documents, Government Printing Office:

The Granular Venereal Disease and Abortion in Cattle. 57 pages, 2 illustrations, 10 cents.

Gate Structures for Irrigation Canals. 61 pages, 30 illustrations (Professional Paper), 20 cents.

This paper will be of interest to engineers and directors of farmers' canal companies in the irrigated sections of the West.

Five Oriental Species of Beans. 32 pages, 7 illustrations (Department Bulletin 119), 10 cents.

This bulletin describes the adsuki bean, the rice bean, the mung bean, the urd, and the moth bean; it is of interest to botanists.

The Mycogone Disease of Mushrooms and Its Control. 24 pages, 8 illustrations (Department Bulletin 127), 10 cents.

Of interest to mushroom growers generally.

Repellents for Protecting Animals from the Attacks of Flies. 26 pages (Department Bulletin 131), 5 cents.

Commercial Turkestan Alfalfa Seed. 6 pages, 1 illustration (Department Bulletin 138), 5 cents.

This bulletin is intended to warn American alfalfa growers to avoid the use of commercial Turkestan seed, which, though inferior to domestic-grown seed, is retailed at a higher price, making greater profits for the dealers. The bulletin tells how this cheapest of all alfalfa seeds in the European market can be identified.

Economic Conditions in the Sea Island Cotton Industry. 18 pages (Department Bulletin 146), 5 cents.

Sudan Grass as a Forage Crop. 20 pages, 10 illustrations (Farmers' Bulletin 605).

Demands for information regarding this new hay plant have come from nearly every section of the United States, but more especially from the Southern States, where the need of a desirable hay grass has been acute since the advent of the boll weevil forced diversification of crops. This bulletin is designed to meet this demand by making available the information at hand.

Bird Houses and How to Build Them. 19 pages, 43 illustrations (Farmers' Bulletin 609).

Wild Onion: Methods of Eradication. 8 pages, 7 illustrations (Farmers' Bulletin 610).

FARMERS SHOULD RAISE WELL-BRED HORSES FOR INCREASED EUROPEAN DEMAND.

During the next decade there will probably be an increased demand for American horses in the countries now engaged in the European war. The demand may even continue much longer, as not only will horses be needed for armies, but when peace is restored more will be needed for agriculture. Already European agents are said to be endeavoring to purchase horses in this country and Canada, and there is an increased interest in many sections in horse breeding.

To meet this increased European demand, American farmers may well endeavor to raise well-bred horses, but the department does not advise them to purchase a surplus of horses merely for breeding purposes. It merely advises that ordinary farm work should be done whenever possible by good mares, which should be bred to good stallions. It also desires to emphasize the fact that only horses of high quality may be profitably raised to-day. Inferior horses are a drug on the market, and their production is to be discouraged as much as the production of good horses should be encouraged.

The United States has previously been drawn on to supply European countries at war. In the Boer War over 100,000 horses were bought here by the British Government. It may be doubted whether a foreign government could now obtain a similar supply in this country, except at excessive cost. However, if farmers take pains to utilize their good mares during this winter to breed them to good stallions, in the course of several years (time enough for the foals to develop) America will be better able to meet the European demand.

It is natural that European countries should look to the United States for horses, as next to Russia it has more of these animals than any other country in the world. The United States and Russia possess 58 per cent of the world supply. Strange to say, however, there were no horses originally on our continent and the present supply comes from stock brought over

from Europe. Canada's supply is small compared to our own.

Our own Army furnishes a desirable market for well-bred horses, there being under the remount system at least 5,000 horses required annually to supply both the Army and the National Guard. There are now about 20,000 horses in our Regular Army on a peace basis. In war, many more would be required before the first engagement. There is, therefore, a steady market for good horses independent of the European demand. Even the invasion of motor power, which has reduced the number of horses on our streets, has not influenced this demand. In fact, the price of horses has advanced along with other commodities during recent years.

The Bureau of Animal Industry of the Department of Agriculture stands ready to aid any farmer desiring to breed high-class horses. As the day of the large horse ranch is practically gone, any increased demand will have to be met by the farmer. There are certain localities more suited to horse breeding than others and places where certain breeds do better. Such details may be obtained for the asking. Even in the South, where mules are bred in preference to horses, an increased production of first-class animals should find a ready market abroad, although the mule is not used on the Continent to the extent that it is used here.

WOOD LOT IMPROVEMENT, FUEL, AND FERTILIZER GO HAND IN HAND.

Every farmer needs fuel; every farmer needs fertilizer; and every farm wood lot needs improvement. Why not kill all three birds with one stone? By judiciously planned thinnings the condition of the wood lot can be greatly improved; the material removed in the thinnings can be burned as firewood; and the wood ashes left are so rich in potash as to make a valuable fertilizer.

The wood lot is, perhaps, the only farm crop to which the farmer has not considered it necessary to devote any care. His grains are sowed on carefully prepared soil; his vegetables are cultivated, and his fruit trees are pruned and sprayed; his forest trees alone are left to look out for themselves. This is the more remarkable when it is taken into consideration that any labor expended on the wood lot not only improves the final crop, but ordinarily pays for itself as well. No detailed technical knowledge is required for the work, all that is necessary is the exercise of common sense.

It is obvious that the trees in any wood lot are not all of equal value. Some are taller, straighter, thriftier, and of species which yield more valuable wood than others. It is also obvious that there is a constant struggle going on between the trees for light and growing space. The object of thinning is simply to give the best trees the advantage in this struggle by removing the poorer ones which interfere with their development.

First of all defective trees should be removed. This includes trees attacked by insects or fungi (conks), trees with fire-scarred butts, with tops broken off by wind or lightning, and in general all trees which are unthrifty from any cause. Next come the trees of poor form, such as very crooked or very branchy ones, which are interfering with the growth of better formed neighbors. And finally are the trees of less valuable species, such as dogwood, ironwood, and hornbeam. These not only take up space that might better be occupied by such species as oak, hickory, and ash, but also, as a rule, produce seed more abundantly and so reproduce themselves at the expense of more desirable trees.

While the wood removed in these thinnings is frequently of no value for other purposes, it can practically always be used to advantage for fuel. In this way the work can be made to pay for itself, particularly when the future use of the wood ashes for fertilizer is borne in mind. The essential point to remember in making such thinnings is that the wood lot is a tree society, in which the best trees should be given every chance to attain the greatest possible development by the removal and utilization of the unfit.

TO MAKE CONCENTRATED APPLE CIDER ON A COMMERCIAL SCALE.

The specialists of the fruit and vegetable utilization laboratory of the department have completed arrangements for a commercial test of the recently discovered method of concentrating apple cider by freezing and centrifugal methods. As a result, a cider mill in the Hood River Valley, Oreg., will this fall undertake to manufacture and test on the retail market 1,000 gallons of concentrated cider, which will represent 5,000 gallons of ordinary apple cider with only the water removed.

The new method, it is believed, makes possible the concentrating of cider in such a way that it will keep better than raw cider, and also be so reduced in bulk that it can be shipped profitably long distances from the apple-growing regions. The old attempts to concentrate cider by boiling have been failures because heat destroys the delicate flavor of cider. Under the new method nothing is taken from the cider but the water, and the resultant product is a thick liquid which contains all the apple-juice products and which can be restored to excellent sweet cider by the simple addition of four parts of water. The shippers and consumers, therefore, avoid paying freight on the

water in ordinary cider. In addition, the product, when properly barreled, because of its higher amount of sugar, keeps better than raw cider, which quickly turns to vinegar.

The process, as described by the department's specialists, consists of freezing ordinary cider solid. The cider ice is then crushed and put into centrifugal machines such as are used in making cane sugar. When the cider ice is whirled rapidly the concentrated juice is thrown off and collected. The water remains in the machine as ice.

At ordinary household refrigerator temperatures this sirup-like cider will keep perfectly for a month or six weeks, and if kept at low temperatures in cold storage will keep for prolonged periods. At ordinary house temperatures it, of course, will keep a shorter time.

To make the concentrated sirup, the cider mill must add to its equipment an ice-making machine and centrifugal machinery, so that the process is not practicable on a small scale. The specialists are hopeful, however, that the commercial test soon to be inaugurated in Oregon will show that it will be possible for apple growers to concentrate their excess cider and ship it profitably to the far South or to other nonproducing regions. The specialists also believe that it will enable apple producers to prolong the market for cider.

DISCOVER WAY TO MAKE FINE TABLE SIRUP FROM APPLES.

Following extensive experiments begun last spring, the head of the fruit and vegetable utilization laboratory of the department has applied for a public-service patent covering the making of a new form of table sirup from apple juice. This patent will make the discovery, which the specialists believe will be of great value to all apple growers as a means of utilizing their culls and excess apples, common property of any cider mill in the United States which wishes to manufacture and sell apple cider sirup.

The new sirup, 1 gallon of which is made from 7 gallons of ordinary cider, is a clear ruby or amber-colored sirup of about the consistency of cane sirup and maple sirup. Properly sterilized and put in sealed tins or bottles, it will keep indefinitely, and when opened will keep under household conditions as well as other sirups. It has a distinct fruity aroma and special flavor of its own which is described as being practically the same as the taste of the sirupy substance which exudes from a baked apple.

The sirup can be used like maple or other sirups for griddle cakes, cereals, household cookery, and as flavoring in desserts. The Government cooking experts are at present experimenting with it in cookery and expect shortly to issue recipes for use of the new sirup in old ways and for taking advantage of its special flavor in novel dishes.

The department chemists have already produced over 10 gallons of this sirup in their laboratories, using summer and other forms of apples. The success of the experiments has greatly interested some of the apple growers, and during October a large cider mill in the Hood River Valley, Oreg., will, in cooperation with the Government chemists, endeavor to produce 1,000 gallons on a commercial scale and give the new product a thorough market test by making it accessible through retailers in a limited field. The interest of apple growers in the product arises from the fact that the new apple-cider sirup promises to give them a commercial outlet for vast quantities of windfall and other apples for which they hitherto could find no market either in perishable raw cider or in vinegar. Cider production, it seems, comes largely at one season of the year during which the market is more or less flooded with this perishable product. The bulk and perishability of the raw cider, moreover, the cider makers state, often make it unprofitable for them to ship the raw cider of one district long distances to a nonapple-growing region. The market for cider, therefore, has been largely restricted in many cases to localities near the area of production. No method of sterilizing ordinary cider has been found practical for the reason that boiling cider at once interferes with its delicate flavor.

With the cider mill able to make a palatable, long-keeping table sirup out of its apple juice, growers, it is believed, will be able to use all excess juice for bottled or canned apple sirup. The new sirup, the specialists find, will keep indefinitely, so that the cider makers can market it gradually throughout the year.

The process for making the sirup calls for the addition to a cider mill of a filter press and open kettles or some other concentrating apparatus. The process is described as follows: The raw cider is treated with pure milk of lime until nearly but not quite all of the natural malic acids are neutralized. The cider is then heated to boiling and filtered through a filter press, an essential feature of the process. The resultant liquid is then evaporated either in continuous evaporators or open kettles, just as ordinary cane or sorghum sirup is treated. It then is cooled and allowed to stand for a short time, which causes the lime and acids to form small crystals of calcium malate. The sirup is then refiltered through the filter press, which removes the crystals of calcium malate and leaves a sirup with practically the same basic composition as ordinary cane sirup. Its flavor, however, and appearance are distinctive.

Calcium malate, the by-product, is a substance used in medicine and at present selling for $2 per pound. It is believed that if calcium malate can be produced in this way cheaply and in large quantities, it can be made commercially useful in new ways, possibly in the manufacture of baking powder.

The cost of making this sirup on a commercial scale will be determined during the test in October.

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Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

VOL. II WASHINGTON, D. C., NOVEMBER 4, 1914 No. 13

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CUCUMBER DISEASES REQUIRE ATTENTION.

There have come to the Department of Agriculture this year an unusual number of reports and complaints of losses to cucumber growers from blights of foliage or fruit, particularly in certain north-central States where pickle growing is an important industry.

These injuries have proved upon investigation to be due to one or another of several distinct troubles: Blighting of the foliage by downy mildew or anthracnose, diseases which have already proved controllable by spraying with Bordeaux mixture; to the bacterial wilt, a disease the cause of which is known and for which a remedy is being sought; to the pickle spot, a disease of sporadic occurrence and not yet remediable; or in some cases to a disease of still unknown nature called white pickle.

Those troubles not already worked out are being investigated by the State experiment stations in Wisconsin, Michigan, and New York, or by the United States Department of Agriculture, and a plan is being formulated jointly by these institutions to carry aid to the growers in case of a recurrence of the diseases next year.

It will have to be proved by experiments whether or not spraying will be generally profitable. The Department of Agriculture points out to the farmers that a long rotation of crops is an important precaution, which should be practiced by all. There is no evidence that these diseases are spread through the seed.

Further details regarding these diseases follow:

Downy mildew.—This is a fungus disease affecting the cucumber plant principally through the leaves. It attacks the old leaves in the center of the plant first, and from there progresses outward, the young leaves at the tips of the branches living longest. It causes first a yellowing of the leaves and faintly defined angular spots, bordered by veins. These become more distinct as the disease progresses, and if the weather is moist the underside of the spots may be tinged with purple. The disease spreads slowly in bright weather, but in cloudy, humid weather often develops with the greatest rapidity, so that fields quickly become as if scorched by fire. The fungus lives through the winter in Florida and probably spreads northward each summer. There is also good evidence that it lives over in greenhouses, which may later become centers of local epidemics. The cucumbers which develop after the disease has attacked the vines are usually of inferior quality. It is exceptional for this disease to be severe so far north as Michigan, and it may not recur again for some time. On the other hand, it is possible that if weather conditions favor it, it may be equally severe another season.

Anthracnose.—This disease appears as circular brown spots from one-fourth to one-half inch in diameter on the leaves of cucumbers and melons. These spots at first have white centers, but in the later stages become dead and often tear, leaving holes in the leaves. They are distinguishable from the angular spots of the downy mildew except when the latter have grown very slowly. On the stems anthracnose causes elongated discolored and shrunken areas, which finally lead to the death of the plant. The fruit also is often spotted. There is evidence that this disease lives over winter in the dead vines or elsewhere in old fields, and the destruction of such vines, together with rotation of crops, is recommended as a means of prevention.

Spraying the remedy.—Both downy mildew and anthracnose can be controlled by thorough spraying with Bordeaux mixture, made up of 3 pounds copper sulphate, 6 pounds stone lime, and 50 gallons of water. The copper sulphate should be dissolved in 25 gallons of water by suspending it near the surface of the liquid in a burlap sack or other container. The stone lime should be slaked thoroughly and then diluted with the other 25 gallons of water. The two solutions should then be poured together into a third barrel and thoroughly stirred. It is essential, however, to begin early, before the disease makes its appearance, to spray thoroughly, so that the leaves of the plants will at all times be covered with a thin film of the Bordeaux, and to spray at close enough intervals so that the new growth will not be subject to fungus attack.

Wilt.—When a cucumber or melon vine suddenly wilts throughout its length and dies without appreciable spotting of the leaves, the trouble is usually caused by a species of bacteria which enters and clogs the water-carrying vessels of the stem. This wilt disease is spread by leaf-eating insects and probably also by soil infection. Rotation of crops is advised for its control, together with the addition of a fungicide like Paris green to the Bordeaux mixture. The Bordeaux mixture acts as a repellent to the insects and helps to check the spread of wilt. There is experimental evidence to show the value of spraying for wilt, but it should not be expected that this disease will be as fully controlled in this way as the leaf blights. It is also important to pull and burn diseased vines as soon as they begin to wilt, in order to lessen the spread of the disease.

Pickle spot.—This disease first appears on the young cucumber fruits as small, gray, slightly sunken spots. These unite into irregular patches, particularly toward the flower end. As the spots age they darken to greenish black, and a gummy exudate often appears. Upon the leaves, where injury is more rare than upon the fruit, the spots are at first watery, and later the leaf wilts and rots. The disease progresses so fast that a plant may be practically destroyed in a few days. Some experiments have been made with spraying for the control of this disease, but the results obtained do not justify the recommendation of this means of control.

White pickle.—This trouble affects both the plant and fruits of the cucumber. It causes the leaves to turn yellow and ultimately to wilt and die. The fruits become light in color and more or less deformed and show light and dark blotches of green, which often stand out as warts. It attacks both young and mature fruits. This is a new disease, the cause of which is still unknown, and the department is unable at the present time to offer any suggestions for its control. It requires further investigation and is receiving attention at the Cornell University Experiment Station and the Michigan Experiment Station.

CORN SMUT AND ITS CONTROL.

Wherever corn has been grown for a period of years the well-known disease known as "corn smut" will be found to have established itself. Its distribution, therefore, is very wide. Considerable losses, sometimes averaging as high as 5 per cent, are sustained by American corn growers, and not infrequently the losses in some sections of the country run as high as 25 per cent.

The corn-smut disease is caused by a parasitic fungus which produces its spore masses in the form of smut boils in the ear; along the stalk, particularly at the nodes or joints, and less frequently within the leaves and tassel. These boils or spore masses are surrounded by a membrane of fungous tissue mixed with cells of the host. Upon drying out, large numbers of microscopic roundish spores are liberated. These are capable of retaining their germinating power over winter or longer. They germinate readily in water or upon any suitable moist medium and produce great numbers of minute secondary spores which are easily carried by wind from one part of the field to another or from field to field.

Carefully conducted experiments covering several years of research both in America and Europe indicate that corn-smut infection takes place at a time or times following the appearance of the host plant above ground and may develop in any delicate growing part of the corn plant. Usually no evidence of infection is noticeable until the plant is a foot or more high.

Unlike oat smut or the stinking smut of wheat, or the covered smut of barley, corn smut can not be controlled by any known method of seed treatment. Infection apparently does not take place at time of sprouting nor for some time following the appearance of the young plant above ground. From the nature of the type of infection it is therefore obvious that the disease can be controlled only by the removal and burning of the smutted stalks. This method, however, is practicable only when corn is grown on a limited scale.

There seems to be considerable difference of opinion as to the effect produced upon cattle or other stock when fed upon corn or corn fodder containing smut. It is doubtful, however, whether corn smut ever produces any direct toxic or poisonous effects upon animals eating it either with grain or fodder. It is not unlikely, however, that an excessive amount of the spores may mechanically affect the digestive functions, and in this way cause sickness.

The Office of Cereal Investigations at the present time is engaged upon an exhaustive study of obscure or unknown points bearing upon the life history and physiology of the smut organism. Experiments will be carried on relative to the best methods of controlling this widespread disease.

HOW FARMERS SHOULD ORGANIZE.

The department is continually receiving inquiries from all sections asking how farmers ought to organize. The answer to such a general question must necessarily be that it depends partly upon the particular needs of a given community and partly upon the capacity which farmers have to establish and manage the work of a suitable organization. There should be a strong local feeling of the need of some improvement and that certain definite aims or purposes can be more fully realized with the aid of organized interest and activity than through individual effort alone. It is folly to expect that mere organization, as such, will achieve a given object, unless the farmers organize in the right way and equip their organization so that it will carry on its work efficiently. Having decided that an associated effort is warranted by the needs of the community, a study should be made of the kind of organization that would be most helpful and the ways and means of making its work effective. While this calls for intelligent, enthusiastic, and self-sacrificing leadership, it is best that this be furnished locally. Organizations may need outside advice, but they should not be promoted by outsiders. The farmer's advance must come as the result of his own efforts; his progress must develop from within rather than from without. The organization that is given him is of far less value to him than the one which he himself creates. In the matter of securing advice it is generally wise to make application to the agricultural college or the proper Government official. In asking for this advice a full statement of the local situation should

be given—the territory to be included, number of farmers interested, class and amount of work to be undertaken, previous cooperative experience, and any other local features that will give a definite idea of the problems that must be met in outlining a plan of organization for the betterment of the community.

USE COTTONSEED OIL.

AMERICAN HOUSEWIVES URGED TO BECOME BETTER ACQUAINTED WITH THE MERITS OF THE AMERICAN PRODUCT.

The European war, according to specialists in the United States Department of Agriculture, affords the American housewife an excellent opportunity to become better acquainted with a very useful native product which has hitherto suffered somewhat from a popular prejudice. By using cottonseed instead of olive oil Americans can not only save themselves money, but can benefit southern cotton growers suffering from the interruption of their normal export trade. In the year ending June 30, 1913, nearly $40,000,000 worth of cottonseed products was shipped to Europe. Much of this was in the form of cottonseed meal, the stock-feeding value of which to farmers is not yet thoroughly appreciated in this country. The remainder is in the form of oils and fats used for cooking and domestic purposes. The latter class of products must now, to a great extent at least, be consumed in this country or not at all.

Hitherto there has been a widespread belief that cottonseed oil was used chiefly to counterfeit or imitate olive oil. This has unquestionably resulted in a prejudice which has done much to prevent cottonseed oil from being judged on its own merits. As a matter of fact, it is fully as nutritive as olive oil, and, on account of its bland flavor, is actually preferred by many. It lacks, of course, the distinctive olive flavor which many persons, especially the Italians, find desirable. Italians, indeed, are frequently not satisfied with the flavor of the highest-grade virgin olive oil, but prefer the poorer product derived from a second pressing of the fruit.

Those who prefer their food less highly seasoned will find cottonseed oil pleasant in French dressing or salads. In mayonnaise dressing, where mustard or other condiments are used, the cottonseed oil gives the dressing a rich, creamy taste.

The great advantage of cottonseed oil, however, is, of course, its cheapness. It always has been much cheaper than the best quality of imported olive oil, and now that the importation of olive oil is interfered with the difference in the price of the two oils will probably be greater than ever. The lower cost of the American cottonseed oil is in itself a strong argument for its more common use. Another is found in the fact that improvements in the process of manufacture have resulted in making the modern cottonseed table products very different to-day from those of even a few years ago. Then the oil was objected to because it was rather strongly flavored and dark colored. Modern processes have removed these objections, and now yield clear, rich oils free from odor and mild and pleasing in flavor.

In this country edible cottonseed oil is manufactured almost entirely in large establishments which make use of sanitary machinery. In this respect the American product differs widely from the imported, which is frequently made in small quantities on individual farms, whose proprietors rarely devote much attention to hygienic considerations.

The original oil pressed from the cotton seed by powerful hydraulic presses is a dark red. To this soda compounds are added in order to remove the free fatty acids and also to take out some of the color. The remaining color is removed by the addition of fuller's earth, the result being an oil that is practically colorless. The oil is then deodorized by blowing steam through it or by means of other special processes. The final product is a liquid which, as far as its nutritive value goes, is practically the same as that of olive oil.

In addition to this fine table product, much of the oil is now compounded with beef suet or lard and in the preparation of solid white cooking fats and shortening. These cottonseed and other vegetable oils are also hardened by a new process which enables manufacturers to make from liquid oils semisolid fats, as lard substitutes, without the addition of any animal fats whatever.

HOW FARM WOMEN MAY GET HELP UNDER THE SMITH-LEVER EXTENSION ACT.

Numerous letters have recently been received at the department from farm women in different parts of the country which indicate that they are under the impression that the funds appropriated by Congress for extension work in the States under the Smith-Lever Act can be distributed to individuals to aid them in improving home conditions, educating their children, etc.

This is a sad mistake. The Smith-Lever funds are given to the State agricultural colleges to enable them to employ men and women as county agents and experts who will move about among the farming people, demonstrate good methods of agriculture and home economics, cooperate with them in studying their farm and home problems, and assist them in the adoption of better methods on their farms or in their homes.

Already many of the colleges have appointed women as extension experts in home economics, and others are planning to do so. In nearly all the Southern States women county agents are already at work in connection with the demonstration work carried on by the agricultural colleges and the United States Department of Agriculture.

These agents will enroll women in home demonstration work and will continue to conduct girls' clubs. They will have the women demonstrate the preparation and use of products from canning clubs, poultry clubs, pig clubs, and the winter garden. Accompanying the use of the club products, the women on the farms will be shown how to make or secure labor-saving devices and conveniences. They will also be encouraged by the county agents to find and extend to others the best methods of work and conveniences already discovered and in use in their communities.

Instruction will be furnished by means of demonstrations, visits from the county agent, circulars, letters, and bulletins from the State agricultural colleges and the United States Department of Agriculture.

This is the logical development of the girls' demonstration work which began with the canning clubs in 1910, when four counties in two States were organized. It has grown to an organization of more than 40,000 girls, under the supervision of nearly 400 women agents. The results of 1913 show that in the canning clubs of the Southern States the 4,202 girls who sent in reports canned 1,032,115 cans of tomatoes and 522,147 cans of other products, with a total value of $180,420.05. They have also developed to a considerable extent special products of southern fruits and vegetables. Poultry clubs have followed the work in canning and gardening and there are now 2,090 poultry club members. Bread clubs have been organized experimentally in a few counties and some home improvement work has been done. This fall will see winter gardening extensively carried on by club members. In all of these activities the adult women on the farms have given active help. Frequently they have been enrolled to receive the instruction and have attended meetings and demonstrations. As cooperators they have eagerly followed the instructions of the county woman agents and have urged that a special work be organized for them.

In the Northern and Western States the principal work has thus far been done by home economics experts connected with the agricultural colleges, but a beginning of the canning club work for girls has been made. The number of home economics experts who are doing work among the farm women is being rapidly increased. It is hoped that before long there will be women agents in every county in the United States.

To avail themselves of the aid offered by the extension organizations in the several States the farm women should, if possible, form local clubs and then communicate with the county agent, whether man or woman, or with the State agricultural college. In this way the club will often be able to secure a visit from the county agent or from a home economics expert from the college. If it is not feasible to form a club immediately, the women should write individually to the college or the county agent. The address of the State agricultural college can, in most cases, be obtained from the local postmaster.

PRICE LISTS.

A new list of Government publications in the field of agricultural chemistry has been issued by the Superintendent of Documents as the sixth edition of Price List No. 40. The publications named in this list can all be obtained from the Superintendent of Documents at varying prices from 5 cents upward. No free copies are authorized and payment must be in advance (by postal money order, express money order, New York draft, or cash). Postage stamps will not be accepted. There is no charge for postage on the documents when they are forwarded to points in the United States or its possessions or to Canada, Cuba, or Mexico.

Another list, the fifth edition of Price List No. 41, is composed of publications on insect pests and the best ways of fighting them. Either of these lists will be sent free on application to the Superintendent of Documents, Government Printing Office, Washington, D. C.

DIRECTORY OF THE DEPARTMENT OF AGRICULTURE.

Secretary of Agriculture, David F. Houston.
Is the executive and administrative head of the department and represents it in the President's Cabinet.

Assistant Secretary of Agriculture, Carl Vrooman.
Assists in directing the work of the department. In the absence of the Secretary he becomes Acting Secretary.

Weather Bureau, Chas. F. Marvin, Chief.
Conducts meteorological investigations; issues weather maps; handles all work relating to climate, storm warnings, frost warnings, etc.

Forest Service, Henry S. Graves, Forester.
Administers the national forests and develops use of their resources.

Bureau of Animal Industry, A. D. Melvin, Chief.
Studies and gives information regarding live stock; conducts the meat inspection and quarantine work.

Bureau of Plant Industry, Wm. A. Taylor, Chief.
Investigates problems relating to plants and plant industries.

Bureau of Chemistry, Carl L. Alsberg, Chief.
Enforces the pure-food law; investigates questions of agricultural chemistry.

Bureau of Soils, Milton Whitney, Chief.
Surveys and maps the soils and investigates the fertilizer resources of the United States.

Bureau of Entomology, L. O. Howard, Chief.
Studies insects in their relations to agriculture.

Bureau of Biological Survey, Henry W. Henshaw, Chief.
Studies wild birds and animals in their relation to agriculture; administers the Federal laws protecting game and regulating the importation of birds and animals.

Bureau of Crop Estimates, Leon M. Estabrook, Chief.
Collects crop statistics; gathers and collates general agricultural statistics; issues crop reports and forecasts.

Office of Public Roads, Logan Waller Page, Director.
Studies and supplies information regarding road making, management, and maintenance.

Office of Experiment Stations, A. C. True, Director.
Supervises the use of Federal funds for agricultural experiment stations; investigates agricultural education, irrigation, drainage, and human nutrition.

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Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

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AZOTURIA, A COLD-WEATHER DISEASE OF HORSES.

With the approach of cold weather horse owners should guard against azoturia, which occurs almost invariably in well-conditioned animals and claims many victims, especially during the winter season.

Various local names have been given to this disease, among which may be mentioned "lumbago," "spinal meningitis," and "black water." The two former terms have been applied owing to the hard and swollen condition of the muscles of the loins and croup and the loss of control of the hind parts commonly observed in these cases, and the latter name is descriptive of the urine, which is usually of a dark coffee color.

While azoturia may occur at any season of the year it is but seldom observed during the warm weather of summer. It usually appears in highly fed, well-nourished animals which, though accustomed to regular work, have remained idle for one or more days without a corresponding reduction in the rations.

As a rule the animal is attacked suddenly soon after leaving the stable in apparently perfect condition. The attack may occur after 5 or 10 minutes' driving or, in some cases, several hours after the horse has left the stable.

Among the first symptoms are a staggering of the hind parts, knuckling at the pasterns, and profuse perspiration. In spite of such spasms in muscles of the hind parts the horse attempts to go on until he soon falls helplessly. Usually there are efforts to rise, but as a rule the animal is unable to stand even should he regain his feet, and it becomes necessary to remove him to the stable on a wagon, sled, or drag.

Horses attacked with azoturia should be immediately freed from the wagon and harness and be provided with ample straw or other bedding to protect them from injury incidental to the struggle to regain their feet. Especial care must be taken to prevent beating of the head upon the ground, and if the patient is very restless a strong man should place his knees upon the animal's neck and hold the head firmly upon the ground. Throw a warm blanket over the prostrate horse and arrange immediately for his removal to a stable, where a commodious and well-bedded box stall should be provided, or, if such is not available, the barn floor or a comfortable shed can be utilized.

In the meantime a qualified veterinarian should be summoned, azoturia being a disease which requires skillful treatment and careful nursing. Until the horse is able to stand it will be necessary to pass a catheter and draw the urine at least twice a day, and also, as an item of nursing, to turn the animal from side to side at frequent intervals, in order to avoid development of bed sores. Both treatment and nursing are best carried out under direction of a skilled veterinarian who is equipped with required instruments and can apply treatment as indicated in each individual case.

Various theories have been advanced in explanation of the true cause and nature of azoturia. A majority of investigators, however, are inclined to the belief that it is an autointoxication. The fact that development of the disease is favored by rich feeding and a period of idleness tends to lend weight to such hypothesis. For practical purposes, however, it is sufficient for the owner of good horses to know that the disease may be prevented with the greatest certainty by reducing the ration of grain when the horses are not working and by exercising his horses daily.

BULBS MAY BE RAISED INDOORS.

Not only are tulips and other bulbous plants attractive around the lawn in early spring, but they are also most satisfactory for indoor culture during the winter. They should be used in separate pots rather than in window boxes. Holland bulbs, such as the narcissus, tulip, and hyacinth, are practically the only plants that will flower satisfactorily in the house with ordinary care. About the only plant giving similar satisfaction is the begonia, according to the department's specialist, who has experimented with many varieties.

The essentials for growing bulbs indoors are that they shall become thoroughly rooted before the tops are permitted to grow. This is done by planting the bulbs in soil either in pots or what florists know as "pans," which are shallow porcelain pots, or in boxes. These bulbs are then put in a cool place in the dark for a period of two to six or eight weeks, or even longer if desired. They should be left there until the roots are well started. The bulbs should then be brought into a slightly warmer place, with some light, for three or four days, and then gradually brought into greater warmth and full light. During all the period of growth the ground should be kept moist without being water-soaked.

Occasionally the roots should be examined to see whether or not the plant requires repotting. This is

done by holding the hands over the top of the pot, inverting plant and all, tapping the edge of the pot so as to loosen it, then lifting the pot off. This can not be done unless the soil is moderately moist. If the ball of earth is completely covered with roots the plant should be put in a slightly larger pot with new potting soil firmed about the old ball of earth by firming with the fingers, and then wetted thoroughly.

Those who do not have gardens would do well to get potting soil of the nearest florist. If it is desired to prepare it, one part compost, one part good loam, and one part sand should be used. The compost should be cow manure and good turf rotted together for a year and turned two or three times in the interim. Well-decomposed leaf mold would answer as a partial substitute for the compost. One-twentieth part bone meal is a good addition to the mixture. If the loam is very heavy, containing much clay, its proportion should be somewhat diminished. If the loam is light and sandy, reduce the amount of sand or, in some localities, omit it altogether.

Narcissi take about five weeks to develop from the time they are brought into full light. Hyacinths take a longer time, and tulips about the same time as hyacinths. The Roman hyacinths come in a little less time, while the paper-white narcissus only takes about four weeks. It is hard to hold the paper-white narcissus for late winter. The hyacinths and tulips are hard to bring into bloom before February. The various forms of the yellow narcissus can be brought into bloom from December until the time for outdoor blooms by starting the bulbs early in the fall and bringing them into the light at intervals of a week or 10 days. For the earliest bloom it is desirable to get the bulbs started in October, and all of the bulbs should be planted before the middle of November.

Tulips require special care and attention. It is best to place the pots or pans in a box and cover the whole pot with at least 2 inches additional soil or ashes and leave them there until the bud has pushed clear above the pot; otherwise the blooms will be strangled in attempting to get out of the bulbs.

Instead of placing in the cellar, these pots and boxes may be buried in the open ground, the pots being covered with 4 inches of soil. In localities where the ground customarily freezes hard a heavy coating of manure should be added as soon as the first crust freezes over the bulbs. This layer of manure will prevent their freezing and will permit the bulbs to be removed to the house from time to time as needed.

The hyacinth, paper-white narcissus, and especially the Chinese sacred lily are frequently grown in water. Special glasses for these bulbs may be purchased in which they may be successfully grown, or they may be placed in any attractive dish and supported by pebbles. The water should be kept so that it touches the bottom of the bulb.

RELATION OF SIZE OF BUSINESS TO THE FARMER'S INCOME.

A careful study by Government experts in regard to the profits made by a large number of farmers in different parts of the United States shows that the size of the farm business is one of the most important factors controlling the farmer's income. The problem of how large an investment is needed in order to carry on a certain type of farming to advantage is of the utmost importance. The amount of this investment will vary according to the type of farming and to the region selected.

In a survey of over 100 farms in an irrigated district in Utah only three farm owners, with less than $10,000 total capital, received a labor income of more than $1,000 for their year's work.

By labor income in this case is meant what remains of the net income after deducting 6 per cent for invested capital and working capital; in other words, what the farmer himself receives for his year's work and supervision.

In a group of 35 of these men, who had small farms and an average capital of $5,345, the average labor income was $235. One out of every five received nothing for his labor and made less than 5 per cent interest on his farm investment. With high-priced land this amount of capital gave him too small an area to utilize to advantage. If land were cheaper, so that a much larger area could be obtained with this same amount of money, then $10,000 might be a sufficient investment to give the farmer a substantial income.

In the Central States, where corn, wheat, and oats are the prevailing crops and where land is from $150 to $250 an acre, $10,000 would be entirely too small an investment to yield the owner a good income, for the reason that 40 to 50 acres—the total amount of land he could possibly buy with this amount of money—would not utilize his teams, machinery, or labor to the fullest advantage.

On the other hand, the number of acres is not always a true measure, as a big business can be conducted on a small area; 20 acres of truck and small fruits may equal a 200-acre farm devoted to grain, hay, cattle, and hogs. It is the type of farming that determines the number of acres necessary for efficient operation. Many persons have made the mistake of buying too high priced land for successful general farming. In other words, they paid truck-farming prices for land which, on account of market relations, should be used for only grain and general farming.

The proportion of the total investment that should be used as working capital is equally as important as size of investment. Generally speaking, about 75 to 88 per cent of the farmer's investment is in real estate, the other 12 to 25 per cent being in live stock and other equipment. This proportion will vary according to the type of farming followed. In regions

where dairying is the main enterprise the amount of working capital may represent one-fourth of the entire investment.

A third point in the consideration of the farmer's investment is the quality of material in which working capital is invested. This is especially true in regard to live stock. Investigations relating to profits in farming show conclusively that the efficiency of the animals to which the crops are fed is one of the most important factors in determining the farmer's net income. This is to be expected, since on many farms in this country the bulk of the crops is in reality sold to the dairy herd or to meat-producing animals. If these are of such poor quality that they yield low returns for their feed, the income to the farmer must be correspondingly small. Hence, no matter how large the total investment, if the quality of the equipment is deficient financial failure is inevitable.

NOTICE TO MAKERS OF MEDICINAL PREPARATIONS.

In answer to many inquiries as to proper labeling for medicinal preparations to comply with the food and drugs act as amended, the department, through the Bureau of Chemistry, has issued the following suggestions to makers and proprietors of medicinal preparations:

1. *Claims of therapeutic effects.*—A preparation can not be properly designated as a specific, cure, remedy, or recommended as infallible, sure, certain, reliable, or invaluable, or bear other promises of benefit unless the product can as a matter of fact be depended upon to produce the results claimed for it. Before making any such claim the responsible party should carefully consider whether the proposed representations are strictly in harmony with the facts; in other words, whether the medicine, in the light of its composition, is actually capable of fulfilling the promises made for it. For instance, if the broad representation that the product is a remedy for certain diseases is made, as, for example, by the use of the word "remedy" in the name of the preparation, the article should actually be a remedy for the affections named upon the label under all conditions, irrespective of kind and cause.

2. *Indirect statements.*—Not only are direct statements and representations of a misleading character objectionable, but any suggestion, hint, or insinuation, direct or indirect, or design or device that may tend to convey a misleading impression should be avoided. This applies, for example, to such statements as "has been widely recommended for," followed by unwarranted therapeutic claims.

3. *Indefinite and sweeping terms.*—Representations that are unwarranted on account of indefiniteness of a general sweeping character should be avoided. For example, the statement that a preparation is "for kidney troubles" conveys the impression that the product is useful in the treatment of kidney affections generally. Such a representation is misleading and deceptive unless the medicine in question is actually useful in all of these affections. For this reason it is usually best to avoid terms covering a number of ailments, such as "skin diseases, kidney, liver, and bladder affections," etc. Rheumatism, dyspepsia, eczema, and the names of many other affections are more or less comprehensive, and their use under some circumstances would be objectionable. For example, a medicine should not be recommended for rheumatism unless it is capable of fulfilling the claims and representations made for it in all kinds of rheumatism. To represent that a medicine is useful for rheumatism, when, as a matter of fact, it is useful in only one form of rheumatism, would be misleading. Such statements as "for some diseases of the kidney and liver," "for many forms of rheumatism," are objectionable on account of indefiniteness.

Names like "heart remedy," "kidney pills," "blood purifier," "nerve tonic," "bone liniment," "lung balm," and other terms involving the names of parts of the body are objectionable for similar reasons.

4. *Testimonials.*—Testimonials, aside from the personal aspect given them by their letter form, hold out a general representation to the public for which the party doing the labeling is held to be responsible. The fact that a testimonial is genuine and honestly represents the opinion of the person writing it does not justify its use if it creates a misleading impression with regard to the results which the medicine will produce.

No statement relative to the therapeutic effects of medicinal products should be made in the form of a "testimonial" which would be regarded as unwarranted if made as a direct statement of the manufacturer.

5. *Refund guaranty.*—Statements on the labels of drugs guaranteeing them to cure certain diseases or money refunded may be so worded as to be false and fraudulent and to constitute misbranding. Misrepresentations of this kind are not justified by the fact that the purchase price of the article is actually refunded as promised.

WINTER GARDENS FOR THE SOUTH.

Field agents of the department are now urging upon farmers in the Southern States the need of winter gardens to supply their families with fresh vegetables through the fall, winter, and spring. Farm fare during these months is often dry and monotonous, and the crops that can be easily raised in a small home garden will not only provide a welcome variety, but, it is said, will do much to remove the demand for spring tonics and other medicines.

To members of girls' canning clubs who have been growing summer vegetables in tenth-of-an-acre gardens the agents are recommending that a plot of well-prepared land, 50 feet long by 20 feet wide, be set aside and that the rest of the garden be planted with a winter-cover crop. In the reserved area about four vegetables should be raised—spinach, lettuce, radishes, and cauliflower or cabbage being among the most desirable. In all the lower sections of the South lettuce, radishes, and spinach can be grown throughout the entire fall, winter, and spring. In the more northern regions and in high latitudes hothouses or cold frames must be used during the coldest months.

In a garden of the size already mentioned, where no attempt is to be made to market the produce, a plot 20 by 20 feet in size should be planted with spinach. The soil should be made fairly rich, and if well-rotted manure is not available a high-grade fertilizer should be applied at the rate of 50 to 100 pounds per tenth acre. Five ounces of seed will make two plantings on the plot in drills 10 to 12 inches apart. The plants should then be thinned out so that they stand 3 to 4 inches apart. Frequent shallow cultivation is necessary, and when the crop is grown in frames this must be done by hand. In most sections of the South, however, spinach can be grown throughout the winter without any protection, since even a hard freeze causes comparatively little damage. Where protection is desired, however, canvas-covered cold frames will almost always be found quite sufficient.

Half as much space as is devoted to spinach can be assigned to lettuce and radishes. With lettuce the best results are secured by sowing the seed in a well-prepared bed and then transplanting the young plants. The seed should be sown thinly in drills 4 to 6 inches apart and covered to a depth of about 1 inch. As soon as the young plants form the first true leaves they should be transplanted and set in the cold frame 2 inches apart each way. When they attain a height of 1½ to 2 inches they should be taken up with a trowel or spade and set in a permanent bed, where they should be 8 to 10 inches apart each way. The soil should be thoroughly prepared beforehand, as very little cultivation is possible later on. As long as the plants are small, however, the soil should be cultivated to keep down weeds and to prevent the formation of a crust.

Radish seed should be sown in rows 10 inches apart and covered from 1½ to 1 inch deep. The lighter the soil the deeper should the seed be covered. When radishes are grown in hotbeds or cold frames the rows need not be more than 4 to 6 inches apart. For good results the soil should be fertile and contain abundant moisture. If well-rotted manure is not available, commercial fertilizer may be applied at the rate of 100 pounds per tenth acre. Fresh stable manure produces an excessive leaf growth and should not be used.

The remainder of the winter garden can be devoted to any one of the number of vegetables, depending upon the preference of the owner or the location of the garden.

Cauliflower will do well in many sections, and if there are good marketing facilities it will pay to increase the area and grow some for sale as well as for home use. Farmers who are planning a garden of this kind are advised to communicate with the county agent for further advice on this point. With spinach, radishes, and lettuce, however, there should be no difficulty. Even where some protection is necessary, a canvas-covered frame will serve the purpose. Where frames are used it is well to pay close attention to watering and ventilation, and the water should be applied to the soil between the rows rather than to the plants themselves.

GROWING WINTER OATS IN THE SOUTH.

Every southern farmer should grow enough oats to feed his work stock during at least a portion of the year. In addition to furnishing feed grain at less cost than it can be purchased, fall-sown oats prevent the washing of the soil, by which much fertility is frequently lost. There is still time to sow winter oats in the Gulf States, though this work should be done at once if good results are to be obtained. According to specialists of the department, oats sown in the Southern States during October or the first half of November may be expected to produce at least twice the yield of grain obtained from spring seeding.

Winter grain may be sown on land which produced a crop of cotton, corn, or cowpeas the past summer. If this land has not already been plowed, it will be better to make the surface soil fine and loose with the disk or drag harrow than to delay seeding by plowing now. Better results are obtained from sowing with the drill than from broadcast seeding, though if a drill is not available sowing the seed broadcast on well-prepared land usually results in a good stand. If the preceding crop was well fertilized, 100 to 200 pounds of acid phosphate will be all that the oats require this fall, though a little nitrate of soda will help the fall growth, especially if the soil is not already well supplied with nitrogen from the growing of cowpeas or some other legume. A top dressing of 50 to 100 pounds of nitrate of soda applied when growth starts in the spring will greatly increase the yield.

The variety of winter oats most commonly grown in the South is Red Rustproof. Appler, Lawson, Hundred Bushel, Bancroft, and Cook are selections or strains of Red Rustproof which are said to be particularly valuable in some localities. The Fulghum is a promising new variety which matures a week or 10 days earlier than the Red Rustproof, and usually produces as much or more grain. As the kernels of all these varieties are large, from 2½ to 3½ bushels should be sown to the acre. The smaller quantity is sufficient if the seed is drilled early on well-prepared land, while 3 bushels or more are needed when the seed is sown broadcast late in the season. The Winter Turf or Virginia Gray is a very hardy variety, which is valuable for pasture or hay production, but which does not yield as much grain in the Southern States as the Red Rustproof. On account of the small size of the kernels, only 1½ bushels of seed of this variety are required.

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UNITED STATES DEPARTMENT OF AGRICULTURE

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FOOT-AND-MOUTH DISEASE.

The outbreak of foot-and-mouth disease has already affected an area so large that it is evident that most active measures are necessary to eradicate it. Cases have been found as far apart as Iowa and Massachusetts, and at the time of this writing (Nov. 10) 13 States have been quarantined—Massachusetts, New York, Pennsylvania, Indiana, Illinois, Michigan, Ohio, Wisconsin, Maryland, Iowa, Rhode Island, New Jersey, and Delaware. Interstate shipments of live stock from these States are absolutely prohibited, and such articles as hides, straw, hay, etc., must be thoroughly disinfected before they can be moved in interstate commerce. Both in virulence and in extent of area affected the present outbreak is more serious than any of the five previous ones which have occurred in the United States.

These previous outbreaks have not been sufficiently serious either to familiarize farmers with the symptoms of the disease or to render them fully alive to the losses that it occasions when permitted to gain a firm foothold. One of its most dangerous characteristics is its extreme contagiousness. Not only may it be conveyed directly from one animal to another, but it may be transported in fodder, picked up from the ground and carried over the country by cats, dogs, and chickens, or communicated through the agency of man. Cases have already been found in which it seems certain that the disease was spread by the curiosity of farmers to inspect suffering animals. They returned from these visits to communicate the disease to their own previously healthy herds.

The contagiousness of the disease explains the action of the Federal authorities in quarantining such large areas. The practice is to clap a blanket of quarantine on the State in which a case of the disease has been found, and then, by careful investigation, determine the exact area infected. When an animal suffering from foot-and-mouth disease is discovered in a herd the whole herd is at once slaughtered. Otherwise it would remain a dangerous source of infection and be a menace to the entire community. It is customary to appoint an appraiser to value the herd. One-half of the appraised value is paid to the owner by the Federal Government and one-half by the State. The slaughtered animals are buried in a deep trench, their hides slashed to make it useless for anyone to dig them up again, and the carcasses are saturated with quicklime. In this manner previous outbreaks have been completely stamped out and there is every reason to hope that this will be the case this year. The chief danger is that there may be infected herds whose existence is not reported to the proper authorities. Farmers are therefore urged, both for their own protection and as a duty to their neighbors, to report immediately all cases of suspicious sore mouths or lameness among their stock.

Foot-and-mouth disease affects chiefly cattle, sheep, goats, and swine, but there are a number of other animals of less commercial importance which are also susceptible. Occasionally human beings are affected, but in the majority of instances the disease is not severe in the case of man. Children, however, may become dangerously ill if their milk is infected.

The first indications of the disease are a chill followed by a high fever, the temperature rising rapidly, sometimes to 106° F. In a short time vesicles about the size of the pea appear in the mouth at the end of the tongue, on the inside of the cheeks, and on the gums. These vesicles contain a yellowish watery fluid. They spread as the disease advances and cause the animal to open and shut its mouth uneasily with a characteristic smacking sound. A day or two after the first appearance of the eruptions in the mouth similar indications appear upon the feet, which are swollen, red, and tender. Because of this the animal frequently persists in lying down, and bedsores develop with much rapidity. In the case of cows the udder and, more frequently, the teats are affected by a similar eruption.

Once the disease is well established it becomes so painful for the animal to eat that food is frequently refused altogether. Strings of saliva hang from the mouth, and flesh is lost with astonishing rapidity. When the udder is seriously affected the milk becomes contaminated and may cause serious results to suckling calves and young pigs. In mild cases from 10 to 20 days may bring about an apparent recovery, but this time may be greatly extended. Moreover, an apparent recovery by no means implies a real cure. The animal may carry the virus in its blood for a year or more and is liable during all this time to spread the contagion or to experience a recurrence itself. The mortality, considering the seriousness of the disease and the losses it occasions, is very small, being estimated by some authorities at 5 per cent, although it frequently is much greater than this. The mortality, however, by no means represents the real losses occasioned by the disease. No revenue is possible from infected herds, and in the case of dairymen an outbreak of foot-and-mouth disease frequently means that

their business is completely ruined. Blooded or other cattle that have become sick with the disease naturally lose their value as breeding animals. It is, however, impossible to get rid of the disease by ignoring it. The only possible remedy is to kill off infected herds, disinfect the premises, and begin over again.

What the disease means to those countries where it has gained a real grip is shown by the fact that on its last serious outbreak in Germany the German Government spent $2,000,000 in fighting it. In 1890 official statistics showed that in the German Empire 431,235 head of cattle, 230,868 sheep and goats, and 153,808 swine were affected with the disease. During the same year the pestilence ravaged live stock in France, Italy, Belgium, Austria-Hungary, Switzerland, Roumania, and Bulgaria. In 1883 it was estimated that the disease cost England $5,000,000. On the occasion of the last outbreak in the United States in 1908 $300,000 was appropriated by Congress, and with the exception of a few hundred dollars it was spent in stamping out the disease. This of course does not include the indirect loss caused by the interruption of business and other factors.

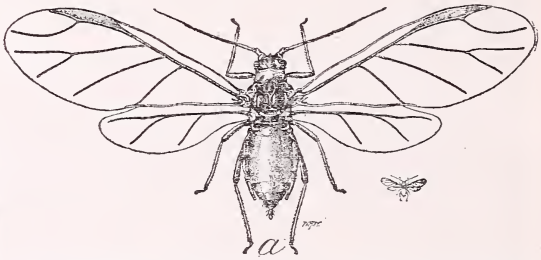
While the Federal Government is active in fighting the disease through its power to control interstate commerce, cooperation on the part of the State authorities is most essential. The quarantining individually of infected farms is a State matter, and it is, of course, a most essential precaution. Farms on which the disease has broken out should be as rigidly quarantined as if some contagious human disease had been found. Since the germs can be transported by cats, dogs, chickens, or human beings, nothing should be allowed to leave the farm until the proper disinfecting measures have been taken. In particular, farmers are urged to keep away themselves, and to assist in keeping others away, from all infected animals. The inspectors who do the slaughtering and disinfecting are supplied with the necessary equipment of rubber gloves, coats, boots, and hats, which can be thoroughly disinfected as often as necessary. Others who lack this equipment merely help in spreading the disease over the country when they visit or inspect sick animals.

DESTROY VOLUNTEER GRAIN TO PREVENT "GREEN BUG" PEST.

Grain raisers, especially those in Texas and on the southern border of Oklahoma, are urged to destroy all volunteer grain by pasturing, plowing under, or burning straw which has been scattered over it, as it is a fertile breeding place for the spring grain aphis or "green bug." Moreover, as the specialists of the department point out, it is particularly necessary for grain growers in these two sections and other parts of the South to stop the first developments of the aphis, as if not controlled in the volunteer grain it may very well spread to the sown grain and become a source of serious damage throughout wide grain-raising areas.

The past history of the spring grain aphis, or "green bug," one of the most dreaded pests of the wheat grower in the Southwest, indicates clearly that destructive invasions west of the Mississippi River have had their origin in central and northern Texas and southern Oklahoma; and, in the eastern country, probably in southeastern Georgia and southern South Carolina. Farmers have thus come to look with uneasiness upon the appearance of any aphis in abundance in their grain fields.

Years of investigation have given us some facts which strongly indicate that, if the appearance of this "green bug" were to be detected in time and vigorous measures employed for suppressing it, destructive ravages might be, to some extent at least, controlled. Furthermore, all of the information at hand strongly implies that if the pest could be effectually controlled throughout a comparatively small area in Texas and possibly the extreme southern border of Oklahoma, the enormous destruction for which it is responsible



a. Spring grain aphis or "green bug" (*Toxoptera graminum*); greatly enlarged and natural sizes (at right). Note that the third wing vein from the body has only one fork.

farther to the north and northeast might be nearly or quite eliminated. This is in fact what actually takes place when an outbreak is overcome in its incipiency by natural enemies. North of the latitude of northern Oklahoma, southern Missouri, southern Tennessee, and North Carolina, the insect passes the winter in the egg stage and therefore would not be able to increase in sufficient abundance in spring to work the serious damage that it usually does during years of excessive abundance. South of this line the insect breeds in wheat fields during favorable weather throughout the entire winter and becomes excessively abundant. Unfortunately the same weather conditions are not favorable for the development of the parasites which prey upon the "green bug." Whenever an outbreak occurs, especially west of the Mississippi River, the pest first makes its appearance in the fields in spots, usually circular in area, primarily indicated by the reddening of the blades of the wheat, which afterwards turn brown. The spots become larger until the insects spread over the entire field. In very many cases these injured spots have been found to coincide

exactly with the location of the shocks of grain where the kernels have rattled off and fallen to the ground, thus producing volunteer plants. In the nature of things, therefore, volunteer grain, whether of wheat or oats, constitutes the initial breeding grounds for the pest. If this volunteer growth could be pastured off in late fall or early winter, much of the danger of an outbreak would be eliminated.

At present the pest may be said to be up to the danger line in point of numbers, and in fact an outbreak was, in all probability, narrowly averted last spring for the reason that another species, the oat aphis, was literally swarming in northern Texas and was heavily parasitized by the same insect that is usually so effective in suppressing an outbreak of the "green bug." It therefore behooves the grain growers, whether of wheat, oats, or barley, in northern Texas, southern Oklahoma, and South Carolina to watch carefully all volunteer grain in order to determine if it is harboring the "green bug." 157 flaxseeds have recent y been found in a single volunteer wheat plant.

HOW TO TELL THE "GREEN BUG" FROM OAT AND EUROPEAN APHIDS.

There are three species that occur in great abundance in grain fields. The first in importance is the "green bug," and is shown both natural size and enlarged in

b Wing of European aphis (*Macrosiphum granaria*).
c Wing of oat aphis (*Aphis avenæ*).

figure *a*. These three kinds of insects are separated primarily by the shape of the veins of the wings. In the "green bug" (fig. *a*) it will be noted that the third vein from the body is only once forked. Figure *c*, the oat aphis, which is the one that was so excessively abundant last spring in the fields, has, it will be noticed, this same vein, twice forked. While in the European form (fig. *b*) the same vein is twice forked, but the forks near the tip of the wing are very much longer than in the oat aphis.

These insects, which are not particularly destructive, are distinguished from the "green bug" by the double-forked wing vein.

It must be remembered, however, that nearly all the members of all three varieties at certain times are wingless. The body of the oat aphis when wingless, however, has a pinkish tinge which distinguishes it from the other two. The oat aphis also usually congregate on the stems, while the other two commonly attack the leaves. While the European aphis is of a green color, it is larger, slightly darker in color, and less smooth in body than the spring grain aphis.

The "green bug" is almost always found on the upper surface of the leaves or in the throat of the plant. It may be said of both the oat aphis and the European grain aphis that though they are not particularly destructive, their abundance in the fields has often been confused with the true "green bug," and reports of their occurrence have caused a rise of 2 or 3 cents a bushel in the price of wheat in Chicago.

The object of this note is to call the attention of grain growers in the South to the danger from an outbreak another spring, should the weather during winter and spring be favorable for the development of the "green bug" and unfavorable for a corresponding increase in its parasites. If these "green bugs" are observed in excessive abundance, clustering upon the leaves of wheat or oats, they should be destroyed by plowing under, pasturing, or covering with straw and burning. If uncertainty arises as to the identity of the insect involved, specimens should be at once submitted either to the office of the Bureau of Entomology at Washington, to its nearest field stations, or to the State experiment station or State entomologist of the State in which the observations are made.

GOVERNMENT ADVICE FOR POULTRY SHIPPERS.

The fact that it will soon be one year since the calamitous dressed poultry season of 1913 wrecked many handlers of poultry, sent tens of thousands of pounds of chickens, turkeys, ducks, and geese to the crematory, and left the consumer with such a strong aversion to the taste of the poultry that reached the market in "off" condition that sales have suffered ever since, is being used as the text of the sermon which experts in poultry handling in the department are preaching to poultry shippers all over the country.

Shippers agree that the spoilage of dressed poultry during the autumn of 1913 was unparalleled, and that the rest of the year has been, financially, one of the worst on record despite the scarcity of meat. Specialists in the department consider that the blame rests chiefly upon the man who killed, picked, chilled, and packed the poultry, and sent it to market. This man bought the birds alive, hence they were not decayed when he got them. The railroads, in general, have worked diligently at their refrigerator lines, and it is well known that shippers who packed their goods properly found the railroad service last autumn sufficiently satisfactory to deliver the product in good order. The receivers of poultry were hunting for stock that could be sold to a high-class trade—but the inspector did not have to look far for poultry that was absolutely unfit for food.

The department accompanies its words of warning with words of advice to the poultry dressers, telling them how to handle the birds to insure high quality and a minimum change in composition.

First. The packer, as soon as the birds are received, should transfer them to "holding batteries," which are really coops so constructed that only a few birds are in the same compartment. All have an equal chance to get food, each has an abundance of fresh air, and absolute cleanliness is easily maintained.

Second. For 24 hours before killing the bird is not fed but is given plenty of clean water. In this way the crop is emptied and the flavor of the flesh is improved, as well as its keeping quality. Of course, the bird does not weigh as much when emptied of food, but it is better to be paid for a few less pounds of poultry than to receive only a freight bill.

Third. Killing should be done by cutting the veins of the neck from inside the mouth while the bird is suspended by the feet (Circular 61 of the Bureau of Chemistry gives the details of how to bleed and to "brain"); that is to loosen the feather muscles so that the birds may be dry picked, not scalded. Scalded birds have their keeping quality greatly reduced.

Fourth. Holding the bird while removing the feathers is best accomplished by the "frame" method. The second best way is what is known as the "string" method, and the worst methods are the "bench" and "lap."

Fifth. After the birds are bled and picked the animal heat must be removed. The best method of doing so is to hang them, head downward, in a room having a temperature between 30° and 35° F., where they should remain for 24 hours. The temperature must not go above 35°, nor below 29°, and the atmosphere can not be depended upon to remain within these limits, hence mechanical refrigeration is an absolute necessity. If the packers last season had adhered to this one regulation, it is safe to assert that the inspectors in the markets would have had to hunt a long time for a "green-struck" or "off-conditioned" chicken. Putting the birds in cold water or water and ice to cool them is unredeemably bad, and packing in fine ice with a heavy lump of ice on top of the barrel is a continuation of an unreliable and often very disastrous method.

Sixth. Pack the chilled birds in standard boxes (12 to the box) or in small kegs, if they are not to be hard frozen, and see that each bird in the package is an exact match in quality, size, color, and perfection of dressing for every other bird. This is the height of the art of "grading."

Seventh. Have the refrigerator car in which the dry-picked, dry-packed poultry is to be shipped iced with a mixture of broken ice and 10 to 15 per cent of salt for 24 hours before loading. When loaded, the temperature of the car midway between the doors, 4 feet from the floor, must not exceed 35° F. To insure the best of handling during transportation, dressed poultry should be shipped in car lots. If you can not get the minimum quantity for a car lot yourself, get together with other near-by shippers and make up a joint car. You may have to bury some hatchets, but that is better than having your bank account snowed under. *Get together.*

Remember that every bad chicken sold hinders or prevents the sale of a number of good chickens. The housewife remembers only that her family did not like her choice of food. Generally, she does not know whether the bird was dry picked or scalded, dry packed or iced. What she wants is a fine-flavored product. Your product may be good, but if your neighbor's is bad yours will also suffer. Get together. In this emergency the good of one is the good of all.

Circulars 61, 64, and 70, Bureau of Chemistry, and Yearbook article No. 591, all dealing with the handling of dressed poultry, will be sent on application to the Department of Agriculture as long as the supply for distribution lasts.

IMPORTED DRAFT HORSES NO LONGER NECESSARY.

With the exception of a very limited number from England, importation into the United States of pure-bred draft horses for breeding purposes has been practically stopped by the outbreak of the European war. For several years previous, from 2,500 to 4,000 stallions and mares have been brought annually into this country. In the opinion of experts in the department, however, the standard of draft horses in America will not suffer from the interruption of these importations. There is, it is said, a sufficiently large amount of pure blood already in the country to answer all requirements and the American draft horse will now have an opportunity to demonstrate its own qualities. Hitherto a certain fascination has hung over the word "imported," which has had a marked effect upon prices. For example, an imported Percheron stallion might sell for $2,000 where an equally well-bred American Percheron would bring only $1,200 to $1,500.

We no longer go to England and Scotland for Shorthorn, Hereford, and Aberdeen-Angus cattle except to a very limited extent. The breeders of these breeds in America have been and are producing the equal if not the superior of the English cattle.

There is no apparent reason why the same thing should not take place in the case of draft horses. The principal breeds of these are now thoroughly established in the United States. Their various characteristics and merits are discussed in a new bulletin published by the United States Department of Agriculture under the title of Farmers' Bulletin No. 619, Breeds of Draft Horses. This bulletin deals with the Belgian, Percheron, French Draft, Clydesdale, Shire, and Suffolk types.

Of these the Percheron probably outnumbers, in this country, all other breeds combined. Grade Percherons, the product of pure-bred stallions crossed with ordinary mares, have proved very popular on our markets. Of late years the Belgian has also made great strides, but this breed is still comparatively new in America. It is found chiefly in the Middle West, where the heaviest types of draft horses are prevalent. During the past 10 years approximately 100 Clydesdales have been imported each year. This type is particularly well liked by those who want style and action, and in consquence is used to a great extent in cities. The Shires, though similar to the Clydesdales, are massive and less active. They are popular on the Pacific coast and in the Central West.

England now permits the exportation for breeding purposes of Clydesdales and Shires, but it is not likely that under present conditions the importation of these breeds will be carried on to any considerable extent. As has already been said, however, experts in the department believe that importations are no longer necessary. The bulletin describing, with illustrations, the breeds already introduced will be sent free on application to the department as long as the supply lasts.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1914

Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

NOV 27 1914
U. S. Department of Agriculture

VOL. II WASHINGTON, D. C., NOVEMBER 25, 1914 No. 16

HUMAN HEALTH AND THE FOOT-AND-MOUTH DISEASE.

The anxiety that has been expressed in several quarters in regard to the effect upon human health of the present outbreak of the foot-and-mouth disease is regarded by Government authorities as somewhat exaggerated. The most common fear is that the milk supply might become contaminated, but in view of the precautions that the local authorities in the infected areas are very generally taking, there is comparatively little danger of this. Milk from infected farms is not permitted to be shipped at all. The only danger is, therefore, that before the disease has manifested itself some infected milk might reach the market. For this reason experts in the department recommend pasteurization. As a matter of fact, however, pasteurization is recommended by the department anyway for all milk that is not very high grade and from tuberculin-tested cows.

It has been demonstrated by experiments which have been made in Denmark and Germany that pasteurization will serve as a safeguard against contagion from the foot-and-mouth disease just as readily as it does against typhoid fever, but in any event it must be thoroughly done—the milk must be heated to 145° F. and held at this temperature for 30 minutes.

In this country the foot-and-mouth disease has been so rare that there are few recorded cases of its transmission to human beings. In 1902 a few cases were reported in New England and in 1908 in a few instances eruptions were found in the mouths of children, which were believed to have been caused by contaminated milk. In both of these outbreaks the sale of milk was stopped as soon as the disease was found among the cattle. As long therefore as the disease can be confined by rigid quarantine to certain specified areas the danger from this source is very small. Should the pestilence spread all over this country and become as general as it has been at various times in large areas in Europe, the problem would become more serious. Under any circumstances, however, pasteurization would be an efficient remedy. Where pasteurization is not possible and where there is any reason to suspect that the disease may exist the precaution of boiling milk might be advisable.

Cows affected with the malignant form of the disease lose practically all of their milk. In mild cases, however, the decrease may be from one-third to one-half of the usual yield. The appearance of the milk also changes. It becomes thinner, bluish, and poor in fat. When the udder is affected, the milk frequently contains coagulated fibrin and blood, so that a considerable sediment forms, while the cream is thin and of a dirty color. These changes, however, occur only when the disease is in an advanced stage, and, as a matter of fact, the disease is not permitted to pass into an advanced stage, as any stricken animal is at once slaughtered.

Men who come in contact with diseased animals may also become infected. In adult human beings the contagion causes such symptoms as sore mouths, painful swallowing, fever, and occasional eruptions on the hands, finger tips, etc. While causing considerable discomfort, however, the disease is rarely serious. Where it is very prevalent among animals, some authorities believe that it is fairly general among human beings, but that the disturbances it causes are usually so slight that they are not brought to the attention of the family physician. There is, however, a very good reason for everyone giving the diseased animals as wide a berth as possible, namely, that otherwise they may easily carry the disease to perfectly healthy herds. Federal inspectors engaged in the work of eradicating the pestilence are thoroughly equipped with rubber coats, hats, boots, and gloves, which may be completely disinfected; and others who lack this equipment are strongly urged not to allow their curiosity to induce them to become a menace to their own and their neighbors' property.

The disease, in short, is dangerous because of the loss that it occasions to property, and not because of its effects upon the health of mankind. At present all infected herds are being slaughtered as soon as they are discovered, the carcasses buried, and the premises thoroughly disinfected. Until all danger of infection has been removed in this way, the local authorities quarantine the milk.

Those who wish additional precautions are recommended to use pasteurized milk, but as has already been said, this recommendation holds true whether or not there is any fear of the foot-and-mouth disease.

WELL-ARRANGED KITCHEN WILL SAVE MANY STEPS.

By properly arranging her kitchen stove, table, and sink in close proximity to the dining room and pantry, and so located that they are not in the way in the frequent trips made from one of these rooms to the others, the housekeeper may save many steps

in her tasks of the kitchen. In planning a new home, or in remodeling an old one, these three items are the most important of the kitchen equipment and should be installed first of all. Other additional

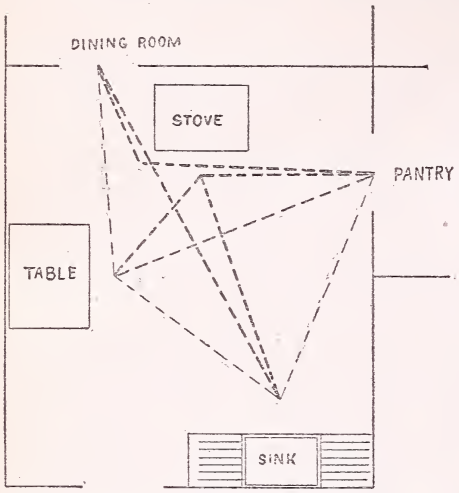


FIG. 1.—Large kitchen in which the inconvenient arrangement of sink and table makes it necessary to walk long distances in preparing and serving a meal.

equipment, such as the ice box, dish cupboard, and set tubs should also be located so that they will be convenient and save the housewife's steps, but their arrangement is not quite so important as that of the articles first mentioned, since they are not so constantly used. These suggestions are taken from Farmers' Bulletin 607, "The Farm Kitchen as a Work Shop."

The stove.—In locating the stove or range, room must be allowed for the hot-water boiler, and there should be a boiler if the family can afford to install running water, since an abundance of hot water, convenient for use, is one of the greatest helps a housekeeper can have.

The hot-water boiler need not necessarily be placed at the side of the range, but may be suspended from the ceiling and need not necessarily be close to the range if space is limited. It must, however, never be placed below the level of the range, as the water will not circulate and heat satisfactorily under this condition. As the boiler gives off considerable heat it may be economical sometimes to put it a little distance from the stove and where this heat may be utilized. In placing the stove allowance must also be made for opening the oven door readily. The oven is usually on the right and the fire box on the left, but in some stoves this is reversed. Where room is limited an oven door which opens downward instead of either to right or left is a convenience.

The floor under the stove or range should be made of or covered with some fireproof material. A built-in base of cement or brick is best, but when this is impossible some one of the composition materials, made of a mixture of cement and asbestos, which can be bought by the square foot, will do very well as a protection for the floor and also for the walls back of the stove. Sheets of zinc or galvanized iron smoothly laid and securely tacked are useful for these purposes.

The sink.—The place of the sink, like that of the stove, is often apparently settled by the builders of the house without reference to the housekeeper's convenience and the position of the other kitchen furniture. If there are water pipes or drainpipes to be considered, their position can be more easily changed than that of the chimney, and should be so changed if convenience demands. The sink is usually placed with its long side against the wall, but this is not always the best plan. Some modern houses have the sink near the middle of the kitchen, so that it may be used from both sides instead of from one only. Or it may be convenient in some rooms to have the end against the wall and the faucets there, if there is running water in the house, as there should be if possible. This reduces the danger of breaking dishes by hitting the projecting faucets. This danger may also be reduced by attaching short pieces of rubber hose to the faucets. The sink and the stove should be near

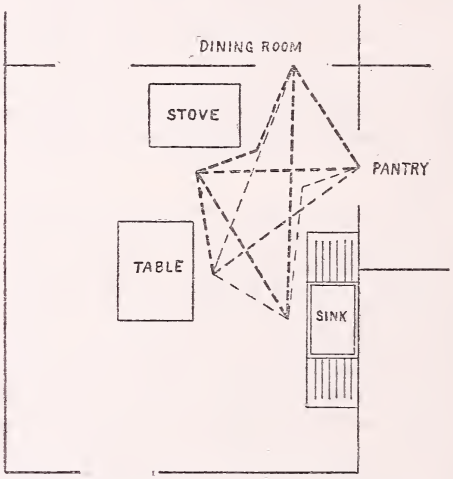


FIG. 2.—Same kitchen as shown in figure 1. The distances traveled have been reduced and many steps saved by cutting another door into the dining room and by moving the table and sink nearer to stove and pantry.

together to save a long journey across the kitchen when a kettle must be filled or emptied, but not so near that the heat will be oppressive when working at the sink. It should be where there is good light, but not across the main window of the kitchen, and should always be placed at a height most convenient for the worker, as should be the work table (see below).

The size of the family and of the kitchen must determine the size of the sink, but a short sink with ample table and shelf room near it may be more con-

venient than a long sink. Two smaller sinks, one for the table dishes near the dining room and the other for general use in the kitchen, are very convenient.

The material of the sink should be the best available, nonabsorbent of grease as well as of moisture, and there should be no cracks or square corners to increase the work of keeping it clean. A wooden sink and sink spout, even when they receive an annual coat of paint, will absorb moisture and grease which attract insects, and are likely to be swarming with bacteria and to "sour" and have an unpleasant odor. Even drain boards of wood are not recommended unless they have a waterproof finish, for instance, of enamel or other paint, renewed when needed.

If a wooden sink is necessary, it is better to have it metal lined, providing the sheets of metal, which is usually tin, zinc, galvanized iron, copper, or lead, are soldered where they are joined and all parts of the sink, including the tops of the sides, are covered with the metal, so that there is no chance for the wood to absorb moisture. Another plan is to have a cement sink built into a wooden frame and lined with sheet copper or tin.

Iron sinks of good quality are superior to wooden ones, since they do not absorb grease or moisture and are durable. They are easily kept clean if smooth (and they will soon wear smooth), but they have the disadvantage of neither showing dirt nor proclaiming their cleanliness. Unless the front is protected by a strip of wood, the dresses and aprons of the worker are likely to become stained with iron rust. A soapstone or a slate sink is durable, but sometimes becomes uneven with wear, and if this happens much brushing and scrubbing are required to remove the sand and grease which gather in the depressions when vegetables are cleaned, dishes washed, etc. Like iron sinks, they do not show whether they are clean or not. Enameled iron and porcelain sinks are probably the most satisfactory, since they are smooth and may be easily kept clean and last well with careful use, but they are more expensive than some of the other kinds. Perhaps the ideal plan is to have a porcelain sink for the tableware in the kitchen or the pantry near the dining room, and an iron or soapstone sink for the heavier kitchen ware.

The double sinks, with one basin for washing and another for draining dishes, are very convenient, but unfortunately they are relatively expensive. A small sink with a rubber stopper for its escape pipe may be used as a dish pan when two sinks are used.

The wall behind the sink should be covered with some material which will not absorb water or grease and which is high enough to hold the faucets if there are any. A solid back of the same material as the sink reduces the number of places which collect dirt and attract insects. Sheet zinc may be used when a solid back can not be obtained, but it must be carefully fitted and held in place with plenty of neatly set nails.

It is important that the sink stand true and level, for if it does not there may be a point lower than the drain where water can settle. Many good sinks are built with a slight slope toward the drain. In case water is scarce and it is difficult to flush the drainpipe properly after the sink has been used, it may be better to wash dishes on the table and carry away the waste water. Openings to all pipes in tubs and sinks should be screened to prevent clogging of the drains.

The plumbing, whether it be a simple drain or the more elaborate plumbing necessary where there is running water, should be easy of access, and therefore it is better that there should be no closet under the sink.

Hooks or shelves under the sink or near it will accommodate everything usually kept in the dark, often musty, "sink closet" of older kitchens. A "sink closet" can be kept sweet and clean, but it means extra work to do it. It is far wiser to have things in sight and in order than to have the extra work of keeping the "sink closet" clean or run the risk of having it an untidy place, which is no better just because it is out of sight. If there is a shelf under the sink it should be from 4 to 6 inches narrower than the sink and at such a height that one can easily clean the floor under it.

There should be a wide shelf or drain board on each side of the sink on a level with the rim of the latter, one to receive soiled dishes and the other clean ones. Some housekeepers have these covered with zinc, but, as in all other places where it is used, the metal must be neatly fitted and closely fastened down so as not to leave any chance for loose, rough edges, or to provide breeding places for insects or a lodging place for grease and dirt. If there is no place for permanent shelves, sliding or hinged shelves may be used. A right-handed person usually holds the dish in the left hand while washing or wiping it, and the dishcloth, dish mop, or towel in the right hand. It is convenient therefore, to have the dishes move from right to left as they pass from dish pan to rinsing pan, and from rinsing pan to drainer tray. This should be kept in mind and a drain board placed at the left of the sink.

Most sinks are too low for even a women of medium height to wash dishes without stooping, and it would be better to have a box stool for a child or short person to stand on than to oblige a tall woman to stoop to a low sink. The bottom of the sink should not be less than 30 inches from the floor, and 31 inches is better for a woman of average height. The "built-in" sink can be placed at the proper height as easily as any other. If there is no way to raise a sink which is too low, the dish pan may be raised to a convenient height by placing it on a rack or some other utensil.

The work table.—The surface of the work table should not be so low that the housewife will be obliged to stoop or raise her arms unnecessarily. (This is also

true of the top of the stove and the edge of the sink). If the housewife finds that she is wasting energy in this manner she may raise or lower her table by placing it upon blocks of wood, preferably hollow on top to prevent the legs of the table from slipping, or, better, by having the table legs spliced; or the legs may be easily cut off. (The stove can also be blocked up or placed on shorter legs if necessary Such blocks have proved useful in actual experience).

Of course, different tasks require different heights of table, but it has been found that the proper height for most tasks is from 32 to 36 inches. The height will, however, vary with the height of the worker, who may test the matter for herself by trying the same task for half an hour or more on tables or packing boxes of different heights. She may then determine at which height she can work best without strain.

Tables for ironing or other processes where considerable pressure is necessary should be somewhat lower than the table for general use, in order that the weight of the body may be utilized in obtaining the pressure. They should, however, not be so low that the worker will have to bend over too much.

It may be found convenient for the housewife to have at least one additional table lower than the regulation one. Such tasks as involve the use of an egg beater, or a chopping bowl require a lower table than the kneading of bread.

RECENT PUBLICATIONS FOR DISTRIBUTION.

Copies of the following publications may be obtained free upon application to the Editor and Chief of the Division of Publications, U. S. Department of Agriculture, Washington, D. C., as long as the department's supply lasts.

When this department's supply is exhausted, publications can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., by purchase only.

The Farm Kitchen as a Workshop. 20 pages, 6 illustrations. (Farmers' Bulletin 607.)

This bulletin is of interest to farm women throughout the country.

Golden Seal Under Cultivation. 15 pages, 5 illustrations. (Farmers' Bulletin 613.)

This bulletin is of interest to residents of Ohio, West Virginia, Kentucky, and adjoining States.

School Lessons on Corn. 14 pages, 5 illustrations. (Farmers' Bulletin 617.)

Furnishes elementary lessons on corn and is of interest to rural-school teachers in all parts of the United States.

Leaf-Spot, A Disease of the Sugar-Beet. 18 pages, 10 illustrations. (Farmers' Bulletin 618.)

A description of leaf-spot, a widespread disease of the sugar-beet, its reproduction, distribution, injurious effects, and methods of control are presented in this bulletin.

Game Laws for 1914. A Summary of the Provisions Relating to Seasons, Export, Sale, Limits, and Licenses. 54 pages, 3 illustrations. (Farmers' Bulletin 628.)

Principal Poisonous Plants of the Western Stock Ranges. Drug-Plant and Poisonous-Plant Investigations. 13 pages, 6 illustrations.

How to use Anti-Hog-Cholera Serum. 5 pages. (Reprinted from Farmers' Bulletin 590.)

FOOT-AND-MOUTH DISEASE QUARANTINES DO NOT INTERFERE WITH THE POULTRY MARKET.

The rise in price of poultry of all kinds which is reported to have taken place in various States can not, in the opinion of experts in the Department of Agriculture, be in any way attributed to the outbreak of the foot-and-mouth disease. This disease does not affect poultry at all, and the Federal quarantines of various States—14 in all—now lay no embargo upon shipments of poultry.

It is true that when a case of foot-and-mouth disease is found upon a farm that farm is absolutely quarantined by the State or local authorities. No produce of any sort can leave it, the owner is not even permitted to drive his horses on the public highway, and in some cases his children are not allowed to go to school until the exposed stock have been done away with and the entire premises thoroughly disinfected. Since the disease, moreover, is readily communicated from farm to farm by cats, dogs, poultry, and human beings, the local authorities exercise their own discretion in determining what restrictions should be placed upon shipments of produce from the area in the immediate vicinity of the infected farm. These areas are so limited in extent, however, that the amount of poultry that may thus be prevented from reaching the market is an inappreciable percentage of the total supply. Poultry from the uninfected areas in the various quarantined States can be moved freely without the least danger of spreading the disease or of injuring the health of the consumer.

ABOVE-GROUND ICE HOUSE USUALLY MORE ECONOMICAL THAN CELLAR TYPE.

Since ice at best is a highly perishable product, requiring special equipment for its preservation, the farmer who wishes to locate an ice house should take advantage of such natural advantages as are offered by shade and exposure. A shady situation with a northern exposure has a decided advantage as a location for such a building.

In general design ice houses are of three types:

1. Those built entirely above ground.
2. Those built partly above and partly under ground.
3. Those of the cellar type, built entirely below ground.

The above-ground structure is by far the most common of these types.

The advantages and disadvantages of these three types may be briefly stated as follows:

Above-ground houses can, as a rule, be more economically constructed than either of the other designs. Excavations are expensive to make and difficult to insulate and drain properly. Insulation and drainage are two of the most important factors in the preservation of ice. It is true that the temperature of the earth varies less than that of the air, but the fact that the temperature of the earth 6 or 8 feet below the surface remains at or about 55° F. the year round makes it quite as important to protect the stored ice against the earth heat as against the heated air. It is more difficult to remove ice as needed during the season from pits than from structures above ground. Slight advantages are apparent at harvest time in favor of the cellar or the half-sunken types of house, and under some circumstances they are to be preferred to the other type.

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Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

VOL. II WASHINGTON, D. C., DECEMBER 2, 1914 No. 17

STOCK OWNERS WARNED AGAINST IMPOSTERS.

Reports are now beginning to come in to the department from several of the States quarantined for the foot-and-mouth disease that persons who have no connection whatsoever with the department are attempting to pass themselves off as Federal inspectors. There are several possible motives that might account for the existence of these imposters. In the outbreak of 1908 there were instances of men who obtained money from credulous victims who believed that in this way they would escape the inconvenience of quarantine and disinfection. This is, of course, a very simple form of extortion. Another motive may be the sale of some quack remedy for the disease.

Stock owners can protect themselves very easily against this fraud, for there is no specific remedy for the foot-and-mouth disease. Since the germ has never been isolated, it has never been possible as yet to find any serum that would act either as a cure or preventive, and the public may be quite certain that anyone who says that he is an employee of the Department of Agriculture, and at the same time attempts to sell or even recommend anything of the sort, is simply an imposter. For this reason stock owners are warned not to allow strangers to visit their stock or attempt any demonstrations of so-called cures by injections or otherwise.

There is, moreover, very great danger that such people might disseminate the disease. It is a well-known fact that the germs can be carried on clothing. In infected territory, therefore, it is quite possible that a man who has come in contact with stricken animals may bring the disease to a perfectly healthy herd. This also accounts for much of the spread of hog cholera.

The department therefore recommends all farmers to keep their animals from contact with all save those who have definite business with them.

INSECTICIDE AND FUNGICIDE CASES.

The recently issued regulatory announcement of the Insecticide and Fungicide Board contains notices of the judgments of the courts in several prosecutions for violations of the Insecticide Act.

Among the penalties imposed on violators of the act in recent cases is the fine of $100 on the Blumauer-Frank Drug Co., of Portland, Oreg., because of the shipment of a misbranded article called "Cresogent" into Idaho from Oregon. The label on same declared that the article was "nonpoisonous" and "destroys ticks." The article was not "nonpoisonous" and did not contain any substance that destroys certain kinds of ticks. The product also consisted partially of water, which does not prevent, destroy, repel, or mitigate insects, and the name and percentage amount thereof were not declared on the label, nor in lieu thereof were the names and percentage amounts of each ingredient having insecticidal properties and the total percentage of the inert ingredient stated on the label.

The Grasselli Chemical Co., of Grasselli, N. J., was fined $50 for the shipment of a misbranded product called "Grasselli Lime Sulphur Solution." The label on the package stated that the package contained a quart whereas it did not contain so much.

The Aphine Manufacturing Co., of Madison, N. J., has been fined $25 for the shipment of an adulterated and misbranded product, called "Aphine," into Ohio. The label claimed that "Aphine" kills red spiders, mealy bugs, and plant lice, which was an untrue statement. The article contained 88 per cent water while the label stated that it contained only 82 per cent.

Other fines mentioned in the recent announcement are as follows:

Product.	Name.	Charge.	Fine.
Mount Hood Whale Oil Soap.	Mount Hood Soap Co., Portland, Oreg.	Misbranding..	$10
Standard Lime and Sulphur Solution.	Portland Seed Co., Portland, Oreg.	.....do.....	10
Nyal's Roach Powder.....	Frederick Stearns & Co., New Orleans, La.	.....do.....	15

[1] And costs.

TERM OF OCCUPANCY OF FARMS.

In taking the last census of agriculture the question was asked, "How long have you lived on this farm?" These data may be summarized as follows:

Farm operators in the United States classified by number of years on farm and by tenure, 1910.

Number of years on farm.	Total number of operators.	Owners, free.	Owners, mortgaged.	Part owners.	Cash tenants.	Share tenants.	Managers.
Total number of farmers.....	6,361,502	2,295,277	1,059,620	593,825	826,287	1,528,389	58,104
Farms reporting	5,794,708	2,005,514	947,487	557,807	779,205	1,451,294	3,341
Total years....	48,539,005	28,050,981	8,723,591	4,823,483	2,950,917	3,746,385	238,248
Less than 1 year.	1,060,293	98,307	93,765	50,568	203,275	541,018	13,360
1 year.....	627,860	99,895	86,711	50,281	124,570	257,859	8,544
2 to 4 years.....	1,371,607	334,277	222,510	138,894	248,032	412,119	15,175
5 to 9 years.....	992,468	379,561	209,971	126,855	117,101	150,554	8,366
10 years and over	1,802,540	1,093,474	334,530	191,209	85,027	89,744	7,896
Not reported....	506,734	289,763	112,133	35,958	47,022	77,095	4,763

NO NEED TO FEAR MEAT.

According to the specialists of the Department of Agriculture people even in States quarantined for the foot-and-mouth disease need have no fear of eating meat, provided they cook it thoroughly. The foot-and-mouth disease is not easily communicated to human beings through food, although milk from a diseased cow might transmit the disease to a human being. In the case of milk, however, pasteurization will render it entirely safe. Human beings who do get the disease commonly get it from direct contact with a sick animal. It is wisest, therefore, for people to keep away from all animals having the disease unless they are properly provided with rubber gloves, coats, and boots, and these are thoroughly disinfected after each visit to the animals.

In the case of meat, as in the case of milk, it must be remembered that all herds which actually show the disease are quarantined, and neither milk nor meat from the sick animals can be sold. Sixty per cent of the meat used in this country is produced in the nearly 900 federally inspected slaughtering and packing establishments located in 240 cities. In these establishments no animal is slaughtered until it has passed an ante-mortem inspection and also a most rigid post-mortem inspection by a veterinarian at time of slaughter. After slaughter its meat can not leave the establishment until it has been carefully examined and stamped "U. S. Inspected and Passed." In all these establishments no animal showing any symptoms whatever of foot-and-mouth disease is allowed to go to slaughter, and no meat which, on post-mortem inspection, shows any suspicious symptoms of this complaint can be shipped out of the establishment. All meat suspected of coming from an animal suffering with this complaint is sent, under Government seal, to the tanks to be rendered into fertilizer. The Federal inspection stamp on meat, therefore, means that it is entirely safe.

The Federal Government, however, has no jurisdiction over local slaughterhouses which do not ship meat outside of the State in which it is slaughtered. If, however, meat from such an animal did escape from one of these local slaughterhouses, which are purely under State or municipal control, all danger of its communicating the disease to human beings would be removed when it is thoroughly cooked and sterilized. Those who are located near an infected region and wish to be absolutely certain of the safety of their meat should cook it thoroughly.

The disease when contracted by adults is not at all a serious illness. It commonly takes the form of slight fever sores in the mouth and a slight eruption on the fingers. In the case of small or sickly children it may take a more serious form, especially if complicated by other illnesses.

TO BREAK UP THE TRAFFIC IN BAD EGGS.

City, State, and Federal authorities are now actively cooperating in Illinois to put an end to the illegal traffic in rotten eggs. From evidence already gathered, there seems to be a definite market in Chicago for "rots and spots" at $2 a case of 30 dozen. In consequence rots and spots from all over the surrounding country have been coming into Chicago in large numbers. In the past the delay necessary to secure authorization from Washington to make the seizures under the Federal food and drugs act has proved a serious handicap in breaking up the traffic. With the cooperation of the State authorities, however, this delay is now largely obviated. Under the detention section of the State law governing this matter, State inspectors are able to hold suspicious shipments for examination and further investigation. The State authorities, being on the spot, are able to act with great promptness. In this way not only are seizures made possible, but the necessary steps toward criminal prosecution are also facilitated. One of the firms in Chicago handling these bad eggs has already been tried by a State court and found guilty. Shipments of bad eggs are also being reported to the authorities in Chicago by city, State, and Federal inspectors in other States, in order that these eggs may be traced to their ultimate destination.

Although there is a certain demand for inedible eggs for technical purposes, such as tanning leather, most of the rots and spots that reach Chicago are first broken and frozen, and then sold to bakers for use in cakes and other forms of food. In one instance, at least, a shipment of these eggs was traced to a firm which admitted that they had no use for them except in food. As a matter of fact, Federal inspectors have been able to secure ample evidence of the use of unfit eggs for this purpose. Before they had the active cooperation of the State authorities, however, it was difficult to act with the promptness required to obtain satisfactory results. Now, with the State and Federal authorities working together, it is believed the traffic can be broken up very rapidly. In this connection it is pointed out that most of the firms using these unfit eggs probably do so reluctantly, believing that the competition of others forces them into the traffic. However, it has been amply demonstrated by the department that the frozen and dried egg business is a successful and important industry only when based on the use of good eggs, handled under special conditions.

Another important result of the work in Chicago it is hoped will be to persuade other cities and States of the necessity of assisting the Federal Government in destroying the traffic in bad eggs. That this can be done has already been demonstrated in Trenton, N. J., where 11 indictments have been found on the charge

of conspiracy in connection with this business. All of the indicted men are now awaiting trial. Such criminal prosecutions it is believed will do far more to put an end to the traffic than any number of seizures or fines. The profit in the business is so great when conducted on an extensive scale that the dealer can well afford an occasional fine. His rots and spots cost him so little that when his goods are seized the loss is insignificant, and in many cases he has no reputation at all to suffer from the consequent exposure.

In this connection the general information which appeared in the Service and Regulatory Announcements of the Bureau of Chemistry, Department of Agriculture, issued August 25, 1914, concerning the denaturing of food products not intended for food but intended for technical purposes, will be of interest to those who deal in certain food products which consist in whole or in part of decomposed material, such, for example, as frozen or dried eggs shipped in interstate commerce for technical purposes. If such products are not denatured before shipment, seizures will be recommended in all cases of interstate shipments of such products. This course will be followed regardless of the labels under which the products are sold. No action will be taken, however, in the case of decomposed food products which have been denatured in such a way as to prevent their use for food purposes.

NOTICE TO APPLICANTS FOR PUBLICATIONS.

The United States Department of Agriculture is receiving an increasing number of requests for publications that are issued by the various State experiment stations, State departments of agriculture, and the extension divisions of the various State colleges and similar institutions.

As this department does not distribute any publications except its own, applicants are advised to find out to a certainty just which college, experiment station, or other institution issues the publications they want, and to apply to that institution direct and not to this department.

While the department does in many cases forward this class of requests to the proper destination, still, owing to the fact that many persons ask in the same communication for publications issued by several differently located institutions, the service rendered is very unsatisfactory, and much time could be saved and confusion avoided if the applicant would send his request to the proper address himself.

PINES ATTACKED BY NEW DANGEROUS EUROPEAN INSECT.

The department is calling attention to the introduction and establishment in America of the European pine-shoot moth, which threatens to cause serious loss. This insect is a small orange-red moth, the larva of which hollows out new buds and kills or injures the ends of twigs of pine trees. This injury causes a deformity which is serious in ornamental trees, and in trees grown for lumber makes a crooked growth and a consequent waste when the tree is cut.

In Europe the insect not only attacks all native pines but is equally injurious to American species cultivated there. The department states that the young larvæ came into this country within the buds on imported pine seedlings which have come from France, England, Holland, Belgium, or Germany. The department's investigators have discovered it in only 10 localities, in 6 States from Massachusetts to Pennsylvania, but it is likely that it may be found in other localities. It has not been found in any native trees in the forest, and with only one exception has always been on European pines in nurseries and private parks. There is no evidence to indicate that it has been in this country more than a year except on Long Island, where it has existed for more than two years.

There are several native pine-shoot moths, but none of them inflicts the serious injury of the European species.

The department hopes that the new pest may be stamped out before it becomes too widespread to be controlled. At present the problem of its elimination is confined mainly to nurseries, but if it once gets into the native pine forests the experts think that it would be beyond control. In its larval stage the moth is so effectively protected in the buds and shoots that it can not be reached by any insecticide, and the only method of getting rid of it is to prune out and destroy the shoots which contain the insect. This should preferably be done during the fall and winter. Though it is easier to locate the injured tips and shoots after growth has started in the spring, it is safer and better for the tree to have it done in the fall. Measures for control to be effective can not be accomplished without the cooperative action of all who grow or plant European pines or deal in them.

Further information in regard to the insect may be obtained by application to the Bureau of Entomology, Washington, D. C.

BENEFIT OF ROADS TO NONABUTTING PROPERTY OWNERS.

The road-building specialists of the department, in Bulletin No. 136, entitled "Highway Bonds," have the following to say about the benefit of a well-constructed highway to property owners whose property is not directly on the road to be improved:

In planning the highway system or the main market roads it will be found necessary to omit many roads the improvement of which is greatly desired by abutting landowners. The fact that such property holders must pay a tax for the bond issue is only an apparent injustice, for if the highway system is well planned the entire county will feel the benefits of the improvement. As a rule, main market roads reach the majority of producing areas, and when they are improved all land values tend to increase.

The fact that cities and larger towns are frequently taxed for bond issues to build highways outside of

their own limits is sometimes made a point of debate in bond elections. It is argued that because a large part of the county wealth is within the corporate limit of such cities and towns highway bond money should also be used to construct their streets. It is even urged that the expenditure should be made proportionate to the assessed valuation within the city limits. If the proceeds of highway bond issues were distributed in this way, their purpose in many cases would be defeated. The primary object of the county highway bond issue is to build county market roads and not to improve city streets, although a high percentage of the assessed valuation may be city property. It is now known that the expenditure of city taxes on country roads is a sound principle and that it is one of the best features of State aid for highways. In Massachusetts the city of Boston pays possibly 40 per cent of the total State highway fund, but not a mile of State-aid highway has been built within its limits. New York City also pays about 60 per cent of the cost of the State highway bonds. Some State laws prohibit the expenditure of proceeds of State highway bonds within corporate limits of cities or towns.

The improvement of market roads results in improved marketing conditions, which benefit the city. Most cities are essentially dependent upon the surrounding country for their prosperity and development. The development of suburban property for residence purposes is also dependent upon highway conditions, and it is becoming evident yearly that whatever makes for an increase in rural population must be encouraged. Since the introduction of motor traffic country highways are used to an increasing extent by city residents. In fact, the cost of maintaining many country highways has been greatly increased by the presence of city-owned motor vehicles. The general advance in facilities for doing country business from town headquarters when roads are improved is no inconsiderable factor in the commercial life of the community.

SEND TO SUPERINTENDENT OF DOCUMENTS FOR "UNCLE SAM'S COOK BOOK."

Readers of the News Letter will be interested in the new free price list, just issued by the Superintendent of Documents, entitled "American Foods and Cooking." This pamphlet gives a list of Government bulletins that have been issued from time to time and which collectively have been popularly known as "Uncle Sam's Cook Book."

The new publication mentions a great number of household pamphlets issued by all branches of the Government.

The subjects of the bulletins listed in "Uncle Sam's Cook Book" range from "apple juice" to "zinc." In the price list there are over 20 pages of titles such as the following:

Bread and toast.
Farm butter making.
Improved method of canning.
Cereal breakfast foods.
Cheese and its economical uses in the diet.
Corn meal as food and ways of using it.
Home manufacture and use of unfermented grape juice.
Economical use of meat in the home.
Digestibility of fish and poultry.
Fish as food.
Maple sugar and sirup.
Care of milk and its use in home.
Preserving wild mushrooms (by canning).
Some forms of adulteration and simple methods for their detection.
Unfermented apple juice.
Egg-candling chart, and many other pub'ications of special value in the city or country kitchen and home.

In applying for the new price list, housewives should send to the Superintendent of Documents, Washington, D. C., who will send the list without charge. Do not write to the Department of Agriculture for the list, as the Superintendent of Documents is not connected with this department. While the price list is sent free, it must be remembered that the pamphlets listed are sent only in payment of actual cost of publication. In most cases this amounts to only 5 or 10 cents.

DIRECTORY OF THE DEPARTMENT OF AGRICULTURE.

Secretary of Agriculture, David F. Houston.
Is the executive and administrative head of the department and represents it in the President's Cabinet.

Assistant Secretary of Agriculture, Carl Vrooman.
Assists in directing the work of the department. In the absence of the Secretary he becomes Acting Secretary.

Weather Bureau, Chas. F. Marvin, Chief.
Conducts meteorological investigations; issues weather maps; handles all work relating to climate, storm warnings, frost warnings, etc.

Forest Service, Henry S. Graves, Forester.
Administers the national forests and develops use of their resources.

Bureau of Animal Industry, A. D. Melvin, Chief.
Studies and gives information regarding live stock; conducts the meat inspection and quarantine work.

Bureau of Plant Industry, Wm. A. Taylor, Chief.
Investigates problems relating to plants and plant industries.

Bureau of Chemistry, Carl L. Alsberg, Chief.
Enforces the pure-food law; investigates questions of agricultural chemistry.

Bureau of Soils, Milton Whitney, Chief.
Surveys and maps the soils and investigates the fertilizer resources of the United States.

Bureau of Entomology, L. O. Howard, Chief.
Studies insects in their relations to agriculture.

Bureau of Biological Survey, Henry W. Henshaw, Chief.
Studies wild birds and animals in their relation to agriculture; administers the Federal laws protecting game and regulating the importation of birds and animals.

Bureau of Crop Estimates, Leon M. Estabrook, Chief.
Collects crop statistics; gathers and collates general agricultural statistics; issues crop reports and forecasts.

Office of Public Roads, Logan Waller Page, Director.
Studies and supplies information regarding road making, management, and maintenance.

Office of Experiment Stations, A. C. True, Director.
Supervises the use of Federal funds for agricultural experiment stations; investigates agricultural education, irrigation, drainage, and human nutrition.

Office of Markets and Rural Organization, Charles J. Brand, Chief
Enforces Cotton Futures Act. Investigates problems pertaining to marketing farm products and organizing rural communities.

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Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

VOL. II WASHINGTON, D. C., DECEMBER 9, 1914 No. 18

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MINIMIZING LABOR ON THE FARM.

A System of Crop and Live-Stock Management Which Helps to Solve the Labor Problem.

A system of farm management by which one man with a little occasional help from outside can do all the work on a 100-acre farm is recommended by the department for those farmers in the corn-belt States who are seriously handicapped by the scarcity of labor and whose soil is suited to rye. Any kind of hired labor on the farm has now become so costly and efficient labor so difficult to obtain, especially the extra labor required at harvest time, that in many sections of the country, in the opinion of experts, this factor will compel a radical reorganization in farming practice, unless conditions change in the near future.

In the corn-belt States a number of farmers have already made some progress toward solving the labor problem by compelling hogs to do much of the work hitherto performed by hired hands. The practice of "hogging off" crops has long been a familiar one, but it is only recently that this has been extended and developed in a scientific way. Under the system discussed in detail in Farmers' Bulletin No. 614, of the department, "A Corn Belt System of Farming Which Saves Harvest Labor by Hogging Down Crops," hogs perform a large part of the harvesting, and the crops are so arranged that one man can do all the plowing, planting, and cultivating necessary. With such a method the hogs, of course, furnish the principal cash income of the farm. Its great advantage is that a larger acreage can be covered effectively without compelling the farmer to depend on outside labor, which is always difficult to obtain and frequently unreliable.

Reduced to its simplest terms, the system consists of a four or five year rotation of corn, corn, rye, and a mixture of clover and timothy one or two years.

For the purpose of illustration, the following diagram of a farm laid out on a five-year rotation, which is the better where hay brings a fair price, will be found useful:

Plan of a farm run on a 5-year rotation.

1.	2.	3.	4.	5.
CORN. First year to be hogged off.	CORN. Second year to be cut and rye sown.	RYE and young clover hogged off and pastured.	CLOVER and timothy hog pastured.	TIMOTHY and clover for hay or pasture.

It is desirable that the five fields included in this scheme should be approximately the same size. Assuming that they are each 20 acres, one man should have comparatively little difficulty throughout the greater part of the year in doing all the work that they require and in addition caring for the live stock. In field No. 1 the first-year corn is grown and hogged off as soon as it is ripe. This is generally from September 1 to September 10. When the corn is cultivated for the last time, it is usually desirable to sow soy beans or rape, in order that the hogs may have pasturage while gathering the corn, and also because such a crop supplies valuable humus which can be turned back into the soil. In the following spring this field is prepared for second-year corn and becomes field No. 2 in the illustration.

Field No. 2 is, as we have seen, devoted to second-year corn, which is not hogged off, but harvested by hand. Here rye is sown in the fall. Under favorable conditions this can be done while the corn is still standing, but if necessary it is not too late after the corn has been cut and shocked. Rye may be sown much later than wheat, and this is one of its great advantages in a rotation such as is now being described.

Field No. 3 is devoted to rye throughout the entire season. In the spring it is pastured by the hogs as long as it is palatable, affording excellent pasturage, especially for young hogs and brood sows. When the rye becomes tough and the hogs cease to relish it, they should be removed and not returned to the field until two weeks after the rye has ripened. They should then be allowed to gather the entire crop and to graze upon the young clover that has come up with it.

Field No. 4 is devoted entirely to hog pasture. When clover and timothy are planted together, the hogs graze principally on the clover and leave most of the timothy to be cut for hay. In the five-year rotation, however, field No. 5 is depended upon to furnish the principal supply of hay for the horses and cows. There should be some surplus, and this, of course, can be sold. Late in the fall the field is plowed for first-year corn, and in the following spring it takes its place in the rotation as field No. 1.

The great merit of this system of crop management is that there is no rush season and the available labor is so distributed throughout the entire year that the maximum acreage is secured. By plowing one field for corn in the fall one man and three horses are able to handle all the spring work to get the corn in, cultivate it, and produce a crop without assistance.

The next operation is putting up the hay, and here it is inevitable that outside labor be called in. Compared with other systems of farm management, however, the amount of outside help required is very small. Since the hogs harvest the rye, there is practically no field work to be done after the hay is in until early in September, when one field of corn must be cut and one field of rye sown. This period of about five weeks in length is thrashing time for the farmer's neighbors, and he and his horses should find it possible to do work for them which can be returned when extra help is needed to shred his corn for bedding. In this way it has been estimated that on a farm of 100 acres the farmer will only have to pay cash for about 10 days' hired labor during the hay harvest.

It is possible that an even larger farm might be worked in this way, but when the fields exceed about 40 acres in extent it is not probable that this system will be found advantageous.

On such a farm, as has already been said, hogs furnish the principal income. They are turned in on the rye as early as possible in the spring, and there the fall shoats and spring pigs remain as long as the pasturage is tender. When the spring pigs are from 6 to 8 weeks old they are weaned and the brood sows taken to other inclosures where they can be bred for fall litters.

By the first part of May it is probable that the rye no longer affords good pasturage, and the hogs are then turned into field No. 4, devoted to first-year clover and timothy. There they remain, with the addition of a reasonably liberal corn ration, until the middle of July, or two weeks after the rye has ripened, when they are turned back into the rye field and allowed to hog it all down without other feed. Roughly speaking, it may be said that if the rye yields 17 bushels to the acre, six 100-pound hogs will harvest an acre in six weeks. Thus, by the time the rye is harvested the corn is ready, and the stock can be turned into field No. 1. Here they can be kept until all the corn is hogged off, which will be approximately November 1, if none of the hogs are sold until the

entire crop is gathered. In this way, with practically no labor and very little attention, the entire herd is furnished with pasture and grain feed throughout the entire spring, summer, and fall.

As for the cash income per acre from such a system, it appears that the method of hogging down rye ultimately brings the same returns as cutting, thrashing, and selling the crop; but in addition to the cash returns, the hogs build up the soil and save the cost of labor. This, it must be repeated, is the real purpose of such a system. With labor already scarce, and becoming scarcer every year, some substitute must be found. In the opinion of specialists in the department, the system which has just been described seems to be sound and practical, at least for a considerable proportion of the farms in those sections to which it is adapted.

FERTILIZER RESOURCES OF THE UNITED STATES.

In discussing the fertilizer resources of the United States, the Bureau of Soils, in its annual report for the fiscal year ending June 30, 1914, says in part:

While the extraction of potash from such natural silicates as the feldspars is quite feasible physically, it is not practicable economically, unless some other salable product is produced in the same operation. An investigation into the use of feldspar in the fixation of atmospheric nitrogen showed promise of a practical method of producing ammonia simultaneously with potash from feldspar. The most promising American source of potash, however, is the annual crop of giant kelps on the Pacific coast. Working maps have now been made of nearly all the commercially available kelp beds from the Cedros Islands to the Shumagins, off the Alaskan coast. The area of these beds aggregates nearly 400 square miles, capable of yielding annually, either as dried kelp or as pure potassium chloride, over six times the present consumption of soluble potash salts in the United States, or something more than the world's present total production. The development of a great American industry, based on the conservation and utilization of this important national resource, of fundamental importance to the national agricultural interests, seems now to be a matter of time only.

If all the coal that is now coked in the United States were treated in modern by-product ovens and the ammonia thereby saved, the nitrogen tonnage would be about that now consumed in the fertilizer trade of the country. While the transition from the old "beehive" to the modern furnace method is steadily progressing, the greater dependence for nitrogen carriers yet remains in cottonseed meal, slaughterhouse by-products, fish scrap, and some other less important materials. The growing and insistent demand for more nitrogeneous feeds to support the meat production demanded by the dietary customs of the American people is gradually but steadily withdrawing these "organic" carriers from the command of the fertilizer manufacturers, while the demand for nitrogen carriers is steadily increasing. The necessity for artificial methods of fixation of atmospheric nitrogen in the United States is not immediately present, but is approaching rapidly. It would be premature to announce the results of the department's investigations as yet, but the types of material which are of commercial promise for American conditions have been pretty well worked out and substantial progress has been made in the investigation of the fundamental technical factors which must control the production of these particular types. At the same time investigation is being made of other possible sources of nitrogen. Following up previous investigation of the possibilities in the fish-scrap industry of the Atlantic coast, already developed, a study has been made of the possibilities on the Pacific coast, including Alaska. The waste fish and fish refuse approximate annually 120,000 tons and can be made to yield about 12,000 tons of scrap (fertilizer) and 3,000,000 gallons of oil, worth, perhaps, $1,800,000. A study is also now under way of the possibilities under American conditions of utilizing garbage and other city wastes.

Although improvements are being made the wastage of phosphate rock at the mines is still disconcertingly large. In Florida, where the most actively worked fields are situated, investigations of the Bureau of Soils have shown that practically 2 pounds of phosphorus goes to waste for every pound produced in merchantable rock. Studies are now being made looking to the recovery or prevention of some of this wastage by mechanical methods, while several chemical methods have been carefully investigated. One of the latter is a modification of the well-known sulphuric-acid extraction, but by "steps." Extraction by electrolysis has been shown to be economically impracticable, but the use of the electric current to produce temperatures necessary for volatilization methods appears very promising, and at least two such methods are now being subjected to factory trials by outside commercial organizations.

A NEW LIST OF PUBLICATIONS.

A list of the publications of the department issued since July 1, 1913, and revised to October 1, 1914, has just been published for distribution to the public. There are two parts to the list; there being 20 pages devoted to an alphabetical list by subjects, and 8 pages listing the department bulletins by number. Those desiring this list, which will be sent without charge, should write to the Editor and Chief, Division of Publications, U. S. Department of Agriculture, Washington, D. C.

STARTING A PARCEL-POST MARKET FOR EGGS.

There are in our cities and towns many housewives who would be glad to make arrangements for receiving a supply of fresh eggs direct from the farm throughout the year. Just at this time, when eggs are scarce and the demand far exceeds the supply of newly laid eggs, there is a good opportunity for the farmer, even though he has but few eggs to market, to make contract with some city or town family to supply them with eggs. The farmer's supply at the present time will not be great enough, possibly, to satisfy the demand of the city family, but if the matter is explained it will be easy to make arrangements to market eggs by parcel post now and continue to do so throughout the year. In other words, it will be much easier to make arrangements to ship eggs now, when everybody wants them, than to do so in the spring, when they are in abundant supply and when the housewife can secure good, fresh eggs in the market anywhere at a nominal price. A satisfied winter customer can be made a profitable all-year customer if proper price adjustments are made when eggs again become plentiful. (Farmers' Bulletin 594, "Shipping Eggs by Parcel Post," can be obtained from the Division of Publications, U. S. Department of Agriculture, Washington, D. C.)

Once having secured a parcel-post market for eggs, it will be very easy to market many other things by the same method, such as butter, poultry, fresh and cured meats, sausage, fruits, vegetables, honey, and so on.

TO SHOW HOW NEW SYSTEM OF COTTON CULTURE BRINGS INCREASED YIELD.

Photographs which show in detail why the new system of cotton culture recommended by the department produces earlier and increased crops are contained in a new circular entitled "Single-Stalk Cotton Culture." This circular follows up the department's Farmers' Bulletin No. 601 entitled "A New System of Cotton Culture." Both of these publications may be had for the asking by interested cotton growers. While Farmers' Bulletin No. 601 gives detailed explanation of the method, the new publication contains photographs of plants in the field showing in detail the development of the new system of culture and the results secured in actual practice, in California, Texas, and Virginia. These demonstrate the methods of procedure under the new system of culture and its value to the farmer.

A concrete demonstration is given of how single-stalk plants may be grown close together in the rows and yet have less crowding than with widely-spaced large plants and numerous vegetative branches. One illustration shows Egyptian cotton growing in California with the vegetative branches almost entirely suppressed. Here the lower fruiting branches have developed and have produced an early crop. These plants are shown only about one foot apart but they could have been left still closer together without injurious crowding. Durango cotton is shown growing in Texas and Virginia. The photographs show the complete suppression of the vegetative branches by the new method of thinning and the single-stalk plants standing about eight inches apart, with the result that the rate of flowering shows an advantage of 42 per cent in favor of the single-stalk rows over the open-spaced rows, while the average yield of the single-stalk rows is 53 per cent better.

The general result of the new system is to secure an earlier production of flowers and bolls. When the new and old systems are compared by applying them to alternate rows there are striking differences of behavior. The advantage is greatest, of course, under extreme conditions where the season of production is shortened by drought, early frost, or the ravages of the boll weevil. The rate of flowering of rows of single-stalk plants, as shown by daily counts early in the season, has been found to average far above that of the intervening rows of larger, many-stalked plants, the differences sometimes amounting to from 40 to 60 per cent. At the end of the season correspondingly increased yields are obtained from the single-stalk rows, in some cases over 50 per cent.

The new circular is issued now so that it may be in the hands of all cotton growers who may wish to read it during the winter and be ready to put the new system into practice next spring. Write to the department for B. P. I. Circular 1130.

PIG CLUB CONTEST AT LOUISIANA STATE FAIR.

The contest of members of pig clubs at the Louisiana State Fair just closed at Shreveport, it is reported, was the most successful of these contests which have been held each year since the work was inaugurated. Although the fair authorities had limited the number of pigs to 150, boys from all over the State shipped 185 entries.

Clarence Martin, 16 years old, from Crowley, La., showed a purebred Tamworth sow pig, 10 months old, weighing 450 pounds. In open competition against all breeders his pig won first in class, junior champion, and reserve grand champion. Young Martin raised this pig on forage crops and fattened her in a rice field after harvest, therefore he had practically no expense for fattening.

Alice McCoy, 14 years old, of Caddo Parish, La., showed a purebred Berkshire sow pig weighing 460 pounds at 10 months of age. Alice bought the pig on credit for $7.50 last spring from a man who was interested in pig club work. Her entry won the sweepstakes in the club competition and won first in class against all Berkshire breeders exhibiting. On a strictly market basis of 7 cents a pound, the pig is worth $32.20, but Alice has an offer of $50 for the animal. It is said that this one pig is worth more than Alice's father's cotton crop under present unfavorable conditions.

HOW TO DRAW A CHICKEN.

Following are the directions given by the poultry-dressing specialists of the department for drawing a chicken at home:

(1) Hold the chicken by the legs and run it quickly over the flame from a loosely-twisted lighted newspaper which, for safety, may be laid in a coal bucket or ash tray. This will remove the fine hairs. Remove any pin feathers with the aid of a sharp small knife blade. The charred hair may be washed off later.

(2) Cut the legs off well below the knee joint. If the legs are cut above the knee joint the flesh on the drumstick will be pulled back from the end.

(3) Cut the head off, leaving as much of the neck as possible, then push the skin of the neck back and cut the neck off quite close to the body. The envelope of the remaining skin gives the dressed bird a neater appearance. The neck bones with the adhering meat make a valuable addition to the giblets. The gullet and windpipe are, of course, on the neck and must be pulled away.

(4) To remove the entrails, make an incision about 2½ inches in length across the abdomen and as close to the vent as possible. In making this incision, be careful not to penetrate the intestine. Slip the fingers in first, and gradually insert the whole hand through the slit into the body cavity. Work the viscera loose from its attachments by sliding the fingers over the inner surface of the body walls. In this way, after a little practice, the viscera can be removed quickly and easily. The lungs will almost invariably tear, leaving shreds sticking to the back. These, and the kidneys of the chicken, which are two long, dark red bodies lying each side of the backbone and firmly fastened, should be removed in pieces. The rest of the viscera, including the crop which lies far front and just under the skin of the breast, when loosened will come out in a mass through the incision. The intestine is still attached to the bird at the vent. To separate it clearly, the tube should be picked up just as close to the vent as possible and its contents pushed well back from the vent. Then cut closely around the vent, holding the intestine tightly between the fingers to insure cleanliness. Run a stream of water through the slit into the body cavity in such wise that it flows out through the vent and cleans the short piece of intestine still remaining. Then cut both vent and intestine away, leaving a neat, round hole no larger than is necessary.

To prepare the giblets, detach the heart, gizzard, and liver, taking great care not to break the little green gall bladder attached to the liver, which contains a very bitter liquid which, if allowed to escape, will give a bitter flavor to the giblets and gravy. This gall bladder is so close to the liver that some liver tissue must be cut away to be on the safe side. The color of a healthy chicken liver may vary from yellow to dark red. To prepare the gizzard, hold it with the thin edge toward the palm of the hand and make an incision the whole length along the thick side, being careful merely to cut through the muscle, but not into the inner sack. Then open the gizzard as you would a pocketbook and remove the inner sac, which is full of gravel, if possible without breaking it.

Finally, wash the chicken and giblets in clean, cold water, but do not let the chicken soak in the water, because the finest flavors of the meat and much nutritive material are dissolved in the water.

Once the chicken is dressed and washed, put it at once in the coldest place available and keep it there until it is to be put on the fire. The best way is to dress it just in time to go into the stove.

HOW THE FARMER MAY USE THE FACILITIES OF THE U. S. DEPARTMENT OF AGRICULTURE.

(Continued from vol. 2, No. 6.)

Office of Soil Bacteriology Investigations.

When certain kinds of living organisms which take nitrogen from the air are properly worked into the soil, crop yields are often greatly increased, and land that is worn out is put in condition for bearing more crops. The Office of Soil Bacteriology Investigations is an important branch of the department's Bureau of Plant Industry, and not only investigates the bacteria beneficial to the soil, but prepares cultures of certain kinds for distribution to farmers, who may use them to make their farming more profitable. During the past year this office distributed enough culture of bacteria to treat about 200,000 acres of crops, such as alfalfa, vetch, crimson clover, red clover, cowpeas, and soybeans.

Upon the recommendation of representatives of the department, especially county agents, the "cultures" are distributed to farmers who need and desire them. The department's agents in their distribution are endeavoring to encourage the use of legume crops, such as alfalfa and cowpeas, in crop-rotation systems so as to maintain the fertility of the land.

Distributions of "inoculating material" have been made by the department since 1902, when the first practical method was evolved for preparing pure cultures of bacteria for inoculating legumes. These bacteria are called "nitrogen fixing," because they are able to absorb nitrogen gas from the air and "fix" it into solid compounds in the soil, where it is a valuable plant food.

QUARANTINE FOR FOOT-AND-MOUTH DISEASE MODIFIED FOR PORTIONS OF WISCONSIN, IOWA, AND ILLINOIS.

By a new order, effective November 30, the Secretary of Agriculture has modified the quarantine for foot-and-mouth disease, so that the meat supply will be released for use and the industry of feeding meat animals freed from obstacles over a large territory in three States. The order is particularly significant in that it permits the shipment of dressed calves, sheep, and swine, which are commonly shipped with their hides, hoofs, and heads on, without restriction from the territory specified. The order in substance is as follows:

The shipment, transportation, or movement of cattle, sheep, other ruminants, and swine into the following-described territory from any other State outside of the quarantined area, or from any Territory or the District of Columbia for any purpose is permitted:

All counties in the State of Wisconsin, except the counties of Green, Rock, Walworth, Kenosha, Racine, Dane, Jefferson, Waukesha, Milwaukee, Lincoln, and Langlade.

All counties in the State of Iowa, except the counties of Mitchell, Greene, Black Hawk, Buchanan, Delaware, Dubuque, Tama, Benton, Linn, Jones, Jackson, Poweshiek, Iowa, Johnson, Cedar, Clinton, Scott, Keokuk, Washington, Louisa, and Muscatine.

The following counties in the State of Illinois: Calhoun, Madison, Bond, Fayette, Effingham, Jasper, Crawford, St. Clair, Clinton, Marion, Clay, Richland, Lawrence, Monroe, Washington, Jefferson, Wayne, Edwards, Wabash, Randolph, Perry, Franklin, Hamilton, White, Jackson, Williamson, Saline, Gallatin, Union, Johnson, Pope, Hardin, Alexander, Pulaski, and Massac.

The shipment, transportation, or movement for immediate slaughter of cattle, sheep, other ruminants, and swine from the territory hereinbefore described to points in any other State, Territory, or the District of Columbia at which Federal meat inspection is maintained, whether in the quarantined area or not is permitted, subject to such restrictions as may be imposed at destination by the officials of the State or the District of Columbia. When such shipments of live stock are unloaded en route within the quarantined area for the purpose of rest, water and feed, such unloading shall be into pens or yards which have been specially cleaned and disinfected for live stock shipped from points outside of the quarantined area.

The shipment, transportation, or movement of dressed carcasses of calves, sheep, other ruminants, and swine, the hides, skins, hoofs, and feet of said animals, and hay, straw, or similar fodder, manure, or litter from the territory hereinbefore described to any other State, Territory, or the District of Columbia, or to any foreign country, is permitted without any restrictions whatever.

COUNTY AGENTS HOLD MASS MEETINGS TO COMBAT FOOT-AND-MOUTH DISEASE.

The recent outbreak of the foot-and-mouth disease has enabled the county agricultural agents cooperating with the department and State agricultural colleges to render special service. Throughout the infected area, wherever there has been a resident county agent, he has been active in his cooperation with State and Federal quarantine authorities.

These agents have, for the time being, subordinated their other work and devoted their energy to helping protect the live-stock interests of the county from the spread of the disease. In many cases they have discovered suspicious cases and established local quarantine measures before the State and Federal inspectors could get on the ground. They have held mass meetings of farmers and discussed the nature of the disease and advised measures calculated to prevent its introduction. In the State of Indiana alone 23 of the 27 county agents are devoting the major part of their time to assisting in eradicating the plague.

SAUER KRAUT FOR WINTER USE.

One method for preserving cabbage for use during the winter when fresh vegetables are scarce is to make it up into sauer kraut. This German dish may be eaten raw, fried, boiled with pork with onions added, or with wienerwurst sausage and browned in oven, or cooked with spareribs.

The department's assistant in girls' demonstration work, who is endeavoring to aid the young women in rural communities to get the most good out of their vegetable products, recommends the following recipe for preserving cabbage in this manner:

Sauer kraut or "crout."—Use 1 to 3 quarts salt to 20 gallons shredded slaw. Remove outside leaves and hard core of cabbage. Shred finely. Line the keg with the larger leaves on the bottom and sides as you fill it. Put in a 3-inch layer of shredded cabbage and sprinkle with 4 or 5 tablespoons salt. Continue to repeat this process, lining with the large leaves. Pound it all down well until the cask is full and covered with the brine. Cover with the large leaves and a board cover to fit inside the cask. Weight this cover down with heavy weight so it will keep the cover level. It is necessary that all the cabbage be covered with brine at all times. Keep in a cool, dry cellar three weeks to a month. Remove the scum and see that the kraut is well covered with juice. When the weather is warm the kraut will cure in 16 to 18 days, when it is ready for use or for canning.

Stuffed baked cabbage and boiled cabbage, if properly prepared, are very decided additions to the family table and the department's specialist recommends the following methods of preparation for these dishes:

Stuffed baked cabbage.—Nine sausages, 1 onion, 1 inch red pepper pod, 1 square inch ham or a slice of bacon, 1 tomato, 1 head cabbage, salt and pepper. Remove outer leaves of cabbage, soak in cold water one-half hour. Scald the head and the large leaves in boiling salt water with one-third teaspoon soda for about 15 minutes. Make a stuffing of the minced ham or bacon, the sausage, onion, and tomato. Mix well and season. Lift cabbage from water, drain well, and open carefully to the heart. Put in 2 or 3 tablespoons dressing, fold 2 or 3 leaves over this, then put in more dressing, and so on until cabbage is well stuffed. Place the outer leaves around the stuffed head, press together, and tie. Put into a buttered baking dish; pour over it 1 cup white sauce seasoned with red pepper and a little salt. Sprinkle top with buttered crumbs and bake until tender (about 15 to 25 minutes). Remove outer leaves; serve on a hot dish with the sauce.

Boiled cabbage.—Remove the outer leaves from the cabbage, cut into halves if small head, into quarters if a large head, and remove the tough stalk. Allow to soak in cold water about 15 minutes before dropping into a vessel of boiling salted water to which you have added one-third teaspoon soda. Cabbage—in fact, all strong-flavored vegetables, such as turnips, onions, and cauliflower—should be cooked in a large amount of water and be cooked uncovered. This will prevent the disagreeable odor during cooking. Cook about 35 minutes or until tender, the time varying with the size of the cabbage. Remove from the water carefully, drain, season with salt, pepper, and butter, or a white sauce may be poured over the cabbage. Serve hot on a hot dish.

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Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

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DEC 11 1914

BUY MAINE SEED POTATOES IN CERTIFIED SACKS ONLY.

The farmers of New Jersey, other Middle Atlantic States, and the Southern States are warned by the department to see that the seed potatoes they buy bear the white label of the Potato Inspection Service of this department. This label is placed on each container and certifies that the potatoes have been examined by Federal inspectors and found free from powdery scab, that they were grown on farms free from, and have not in any way been exposed to this, disease.

They are warned against the use of table potatoes for planting purposes, as these, even though they do not show the disease, may have been exposed to powdery scab. Table potatoes are usually shipped from Maine in bulk and the car carries a blue certification tag, while seed potatoes are in sacks or other containers of a capacity not to exceed 180 pounds, and each container is separately certified.

Some dealers have been buying table stock and selling it for seed. These men are not violating any law, but they are exposing their customers to the risk of the introduction of a dangerous disease and a quarantine should the powdery scab be introduced.

The white seed certificate relates only to freedom from powdery scab, but potatoes so certified are likely to be of better quality and less mixed than table-stock potatoes. The supply of certified seed potatoes in Maine is ample, and the price this year is low, so that there is no excuse for planting table-stock potatoes.

The department also states that the rigid inspection and other precautions thrown around certified seed stock from quarantined districts make such stock as safe as potatoes from noninfected areas, and often better selected.

MUTTON LAMBS FOR SOUTHERN FARMS.

It is not generally recognized by farmers of the Southern States that the keeping of small flocks of sheep on farms can be made a source of quick and profitable returns from the money invested. If instead of permitting the flocks to run free and open to the ravages of stomach worms and to the attacks of dogs, care is taken to obviate such losses, a profitable industry can be made to take the place of one that is now quite frequently a losing proposition. Losses from both of the above-named sources can be reduced to a minimum by handling flocks properly.

Stomach-worm infection follows usually the grazing of uninfected lambs upon old or permanent pastures that have been previously infested. The egg from which the stomach worm is hatched is thrown off in the feces of infected sheep. Under favorable climatic conditions this egg hatches out the parasite, which develops in the organic matter of the manure until about one-thirtieth of an inch in length, at which time it is ready to be taken into the stomach of the sheep for complete development. The worm's chances of reaching its host are enhanced by its crawling up on the tender shoots of grass so eagerly sought by lambs.

During the spring months in the South from 12 to 14 days are required for these parasites to hatch from the egg and reach the infectious stage. Hence it is assumed that during the spring months lambs can be run with their mothers on uninfested grounds with comparatively little danger of infection if changed to fresh areas within two weeks' time. Such changes can be made possible by using for pastures forage crops that have been sown on small fenced areas or paddocks. In using such a system of pasturage it is essential that considerable forethought be given to planning a system of forage rotation that will furnish the desired grazing in regular succession. Farmers' Bulletin 509, entitled "Forage Crops for the South," is obtainable free from the department, and contains information that will be helpful in planning such a forage system. Rape, cowpeas, vetch, crimson clover, rye, and oats should constitute the principal forages used.

Recently a flockmaster in North Carolina, whose flock had been established for 25 years, disposed of his sheep because dogs attacked and killed 15 of them in one night. Losses of this nature can be reduced to an insignificant number, if not eliminated, through keeping the sheep in dog-proof inclosures. Because forage-crop pastures so greatly reduce the acreage of areas upon which sheep may be kept, it is economically possible to build dog-proof fences around such inclosures. A fence built similarly to the one here described should successfully turn dogs from sheep paddocks.

Specifications.—Posts 7½ feet in length, set 2½ feet in the ground and 16 feet apart; a barbed wire stretched flat to the surface of the ground; 3 inches higher, a 36-inch woven-wire fence having a 4-inch triangular mesh; 5 inches higher a barbed wire; 6 inches higher a second barbed wire; 7 inches above this a third barbed wire. Total height, 57 inches.

There are two ways by which those farmers not engaged in the sheep industry can best enter it should they so desire. One is through purchasing good

healthy native ewes and breeding them to a mutton ram of their chosen breed. The other is through purchasing all pure-bred stock as a foundation herd. It is believed that the former method will prove most satisfactory for the beginner. A distinct advantage of such a flock would be in the fact that they would be acclimated to the South from the start, while the pure-bred flock would most likely have to undergo acclimatization—a change often accompanied by temporary losses.

The South offers opportunities of raising early spring lambs that are not afforded by any other section of the Union. On account of climatic conditions, ewes naturally lamb much earlier than they do in the North, and the southern farmer should take advantage of this condition. Lambs born in November and December can be finished for market by the latter part of February or 1st of March, and if shipped north will command the highest prices paid for lambs. To produce such mutton, it is essential that the lambs be well fed from time of birth until placed on the market and at no time should they slow up on their feeding.

Remembering that the cheapest gains are always made with young stock and that forage crop conditions are especially suitable for producing and finishing mutton lambs, the southern farmer can well afford to give thought and consideration to the possibility of placing a small flock of sheep on his farm. The success of the Tennessee spring lamb industry is an indication of the possibilities of the industry in other Southern States.

PURE ICE OF GREAT IMPORTANCE TO COUNTRY HOME.

During the winter farmers will find it profitable to make every possible arrangement for harvesting and storing such ice as may be available in their localities. Ice is a luxury and yet in many sections of the country it may be had for the gathering if the farmer is prepared for the harvest at the right time. The cost of harvesting and storing ice is not great compared with the comfort that it brings, and an ample supply of this luxury is of greater importance in the country home than in the city residence. Even such farmers as are not near lakes or streams often gather quite a supply of ice by putting out pans or wooden troughs filled with water and removing the ice after the water has frozen.

While city people may purchase perishable supplies as needed, the remoteness of country homes from markets makes it necessary to use more canned, corned, or smoked meat products at a season when the table might be supplied with other meats if there was an available supply of ice to keep it.

Not only is ice appreciated because of its use in the preservation of fresh meats, butter, and other table supplies, but production of high-grade domestic dairy products is almost impossible without it. Many markets to which milk is now shipped demand that it be cooled before shipment to a degree not attainable without the use of ice. Modern methods of marketing show that other products besides milk, such as fruit and eggs, if chilled before being taken to market arrive in much better condition. Ice in the country home, therefore, is of value for a greater number of purposes than at first might seem.

The source of the ice supply varies with local conditions. In many sections lakes, rivers, or large streams afford a supply of suitable ice without special plan or preparation on the part of man. In other instances, where such natural sources are not easily accessible, small streams or even the water from a spring can be stored in an excavation or by means of a dam, so as to afford sufficient water surface to provide the desired ice supply. The harvest area or surface will depend upon the tonnage to be stored and the normal thickness of the ice in the locality. In central New York the normal ice supply ranges from 8 to 12 inches in thickness, while in eastern Virginia 4 to 6 inches is as great a thickness as can usually be counted upon.

The stream or pond from which the supply of ice is taken should be fed from a source free from contamination or pollution. If the stream is so sluggish that water weeds thrive in it, all vegetation must be removed to prevent its freezing in the ice. Decaying vegetable matter frozen in ice is very objectionable, because as the ice melts this matter is deposited in the ice box or refrigerator, rendering it unnecessarily filthy and dangerous to health.

Ponds in which green spawn or algæ grow profusely can be rid of these pests by the use of copper sulphate. The crystals can be placed in a cloth sack, which is hung to a pole and trailed through the water until the salts are dissolved. One or two treatments of the sulphate during the season at the rate of 1 pound to 100,000 gallons of water will be sufficient to keep down such growth and make the water clear and pure. It is impossible to have pure ice unless the pond or stream is clean and the water is free from contamination.

DIFFERENT VARIETIES OF WINTER WHEAT FOR DIFFERENT STATES.

Useful information in regard to the varieties of winter wheat best fitted to various States in the eastern half of the Union is contained in a bulletin of the department—Farmers' Bulletin No. 616, "Winter-wheat varieties for the eastern United States."

Since the introduction of hardy varieties of winter wheat from southeastern Europe the winter-wheat area in this country has expanded steadily northward. It has been found by experience that winter wheat in general gives larger yields than spring wheat be-

cause of its greater drought resistance and its earlier maturity, which enables it to escape hail, winds, disease, etc. In Iowa, for example, the average yields for five years show an advantage of 4.8 bushels in favor of winter wheat over spring wheat, and a four-year test in Minnesota was even more favorable, showing an advantage of 8.5 bushels. A great number of varieties, however, of winter wheat make a careful selection on the part of the farmer advisable.

Copies of this bulletin will be sent free on application as long as the supply lasts.

HEAVY SOIL EROSION IN THE SOUTH.

The following statement regarding soil erosion in the South is taken from the annual report of the Bureau of Soils of the department:

In a study of soil erosion in the South it has been found that large areas are lost to agriculture annually through erosion. In some States vast areas, amounting to as much as 50 per cent of the arable land of these sections, have been abandoned. The character of the erosion varies with the type of soil. Usually, on the heavy clay soils, "sheet" or surface erosion is found. With increasing proportion of sand in the soil the erosion changes to the "shoestring" type, then to the gully type, with rounded edges, and finally to the gullies with caving sides. The most rapid erosion seems to occur in soils having a layer of silt or clay at the surface and a substratum of sand. This condition usually leads to erosion of the deep gully type, which is difficult to check and unprofitable to reclaim.

All methods for prevention and control are based either on increasing the capacity for absorbing the water as it falls, or on decreasing the velocity of the run-off. A new method in use in one locality is the construction of what are known as "christophers," the distinctive feature of this plan lying in the manner of disposing of storm waters. Across an incipient gully is built a dam, through which is passed a sewer pipe connected with an upright pipe on the upper side of the dam. Water fills the valley until it reaches the top of the upright pipe, and then flows down this pipe into the next field. The water left standing below the mouth of the upright pipe is gradually removed by a tile drain. It is also demonstrated in the South that other crops must be grown than those requiring clean culture, as do cotton, corn, and tobacco.

SEED CORN MAY BE BETTER GRADED BEFORE EARS ARE SHELLED.

Seed corn may be graded better before the ears are shelled than afterwards. The department's specialists in corn investigations consider it difficult to grade shelled corn satisfactorily.

If the seed ears vary greatly as to size of kernel they should be separated into two or three grades according to size of kernel. These grades should be shelled separately, tested in the corn planter, and numbered to correspond with the number on the planter plates that are found to drop them most uniformly. These arrangements can be completed before the rush of spring work begins.

The first operation in properly shelling seed corn is the removal of the small kernels from the tips of the ears and the round thick kernels from the butts. The former are less productive than the other kernels of the ear. The round butt kernels are as productive as the other kernels of the ear, but do not plant uniformly in a planter.

Shelling seed corn carefully by hand is profitable. The greater the acreage planted the greater the profit. Into a shallow pan or box each ear should be shelled separately, rejecting any worm-eaten or blemished kernels. If the supply from the one ear appears good and contains no poor kernels, it is poured into the general supply and another ear shelled in the same way.

REPORTS ON COMMERCIAL MOVEMENT OF ONIONS AND CABBAGE.

Reports received from 290 shipping points in 16 principal late-onion producing States show that approximately 18,934 carloads of onions were shipped from these stations in 1913. Of this number about 12,239 cars were moved during harvest time and 6,695 carloads were held in storage at those points for later sale. From these reports the estimated commercial onion crop for the year 1914 at the same points is 21,623 carloads, and the estimated quantity going into storage at those points 7,879 carloads. These 16 States produce about 75 per cent of the annual crop.

Reports received from 328 shipping points in 10 principal late-cabbage producing States show that approximately 18,694 carloads of cabbage were shipped from these stations in 1913. Of this number about 14,465 were moved during harvest time and 4,229 carloads were held in storage at those points for later sale. From these reports the estimated commercial cabbage crop for the year 1914 at the same points is 20,390 carloads, of which number around 15,745 cars are being moved during harvest and about 4,645 cars put into storage. These 10 States produce about two-thirds of the annual crop.

IMPORTANT TO STIR MILK IN CANS DURING WATER COOLING.

The milk in the top of the can just above the water level in the cooling vat cools much more slowly than the milk that is below that level, according to experiments by the Dairy Division. The warmer milk in the top of the can does not circulate naturally with the cold milk at the bottom. The cold milk being heavier than the warm will remain at the bottom of the can, while the warmer and therefore lighter portion will remain at the top, and practically no circulation will take place. The transfer of heat

in this case is very slow; moreover, the milk around the sides of the can cools much more quickly than that in the center of the can. It therefore is important to stir the milk while cooling.

In experiments made with cans where the top of the milk was above the water level, it was found that the milk above that level remains from 5° to 6° warmer than the portion below the level. Bacteria consequently will develop at a higher rate in the top of the milk, and when later the milk is mixed, the souring of the whole canful will be hastened both by reducing the temperature of the whole and also by the increased number of bacteria in the warmer portion.

In the experiments all the cans were cooled by the same method. The milk in some of the cans was stirred every 15 minutes while that in others was not. The water in the cooling tank was 62.6° F. The milk that was stirred cooled from nearly 90° to slightly above 60° in 3 hours. The unstirred milk did not get down to a similar temperature for 4 hours and 15 minutes. Meanwhile in the unstirred milk all the milk above the water level in the running water was 5° to 6° warmer. The comparatively rapid decrease in temperature when the milk was thoroughly stirred at intervals of 15 minutes demonstrates the advantage of agitating the milk while cooling.

The advantage of stirring is emphasized by the fact that at the time the milk was stirred the temperature of the room was over 6° warmer than was the case when the unstirred milk was put into the running water. The time taken to cool the milk in either case, however, is too great for good results, and the test served best to demonstrate the necessity of employing some form of milk cooler suitable for farm use, and more efficient than running well water.

Where ice is plentiful and may be had at nominal cost, it is easy to reduce the temperature of the milk to 40° F. This may be done by running the milk or cream over some form of cooler around which cracked ice, or a mixture of ice and salt, is placed, or through which ice water is circulated.

Where the milk is placed in cans and set merely in cold water, or even in a tank filled with ice water, the cooling goes on very slowly, especially if the cans are large.

THE COUNTY AGENT AND PROFITABLE AGRICULTURE.

The county agent is a part of a great agricultural movement. This movement has for its ultimate purpose the building up of a country life that shall be wholesome, attractive, cultured, efficient, and profitable. There are many sections of our country to-day that have one or more of these conditions, but the sections where all are found in happy unison are comparatively few. The desire of those who are thinking on rural problems is that rural communities everywhere shall be wholesome, attractive, and cultured, and that each individual shall receive a fair reward for the labor done and the capital invested. The county agent has one dominant part in this program. While he may take other parts, his primary function is to help make agriculture efficient and profitable. In proportion as agriculture is made profitable will the community become attractive, cultured, and a place wholesome and desirable to live in.

Just what is meant by a profitable agriculture? Simply this: There shall be a reasonable return on the capital invested in farming and a reasonable return for the farmer's labor and managerial ability. A farmer, like any other man in any other business, is entitled to just what he earns and no more; but what he earns should be sufficient to give him and his family some of the more essential conveniences of modern life, time for study, some recreation, and opportunity for education for his children. With some money in his pocket the farmer will support the church, place conveniences in his house, magazines and literature on the sitting-room table, and send his children to the best schools with very little outside prompting.

IMPORTANCE OF ORGANIC MATTER IN SOILS.

The following item on soil fertility is taken from the annual report of the Bureau of Soils:

Organic matter is essential to make a soil of what would otherwise be pulverized and more or less hydrolyzed rock, and while there are some soils capable of growing crops that contain small quantities of organic matter, on the whole the quantity of this material in average soils is considerable. The average organic content of soils amounts to approximately 50 tons per acre, and yet the nature of this material has been but little understood. It has been believed for many years that it consisted chiefly of some such body as humic acid, differing perhaps in different soils, but having the same general properties. One prominent service which these investigations have rendered agriculture has been to show the nonexistence of humic acid and its hypothetical relatives and to show instead the existence of many compounds with many relationships.

This line of research has been especially profitable during the year just past, and the number of compounds isolated and identified has been increased to more than 40. Some of these compounds contain only carbon and hydrogen; some carbon, hydrogen, and oxygen; some carbon, hydrogen, oxygen, and nitrogen; others contain phosphorus or sulphur. Isolation in a pure condition of these organic constituents of soils has made possible the correct interpretation of the changes that organic matter undergoes in soils. The compounds found are recognized as representing decomposition products of fats, carbohydrates, proteins, and other classes of natural compounds, and a great deal of light is shed thereby on the processes of humus formation and transformation in the soil. These researches into the nature and properties of soil organic matter have shown conclusively that the soil investigator must take into consideration the presence of organic compounds in the soil.

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RURAL CREDITS.

The following is the full text of the section on Rural Credits in the Report of the Secretary of Agriculture for the year 1914:

Closely related to production and distribution of farm products is the securing of capital by farmers on better terms. This problem has attracted the profound attention of the country and still awaits a full solution. The difficulties arise partly from the diffusion and sparseness of the rural population, partly from the failure of proper business adjustment, and partly from the inadequacy of the security which part of the farming population normally can offer for loans. The problem is one of extending the banking machinery and facilities more intimately into the country districts for the convenience and the assistance of the rural population and of the effective mobilization and utilization of the resources of the country people themselves.

The chief difference of opinion arises over whether there should be special aid furnished by the Government. There seems to be no emergency which requires or justifies Government assistance to the farmers directly through the use of the Government cash or the Government's credit. The American farmer is sturdy, independent, and self-reliant. He is not in the condition of serfdom or semiserfdom in which were some of the European peoples, for whom government aid was extended in some form or other during the last century. He is not in the condition of many of the Irish farmers for whom encouragement and aid have been furnished through the land-purchase act. As a matter of fact, the American farmers are more prosperous than any other farming class in the world. As a class they are certainly as prosperous as any other great section of the people; as prosperous as the merchants, the teachers, the clerks, or the mechanics. It is necessary only that the Government, so far as geographic and physical conditions permit, provide machinery for the benefit of the agricultural classes as satisfactory as that provided for any other class, and this the Government has attempted and is attempting to do.

It is the judgment of the best students of economic conditions here that there is needed to supplement existing agencies a proper land-mortgage banking system operating through private funds, just as other banking institutions operate, and this judgment is shared by the leaders of economic thought abroad. The national banking system up to the present time has labored under restrictions imposed by law which made it impossible for the national banks to solve the problems in the most effective way. State banks with fewer restrictions, with smaller capital requirements, and ability to lend on real estate have established more intimate touch and have perhaps rendered greater assistance. Likewise certain agencies, such as building and loan associations, insurance and mortgage debenture companies, and the cooperative credit associations recently created by State legislation in Texas, Massachusetts, New York, and Wisconsin, operate to extend capital to the farming districts, and thereby in a measure tend to cut down the rate of interest.

THE FEDERAL RESERVE ACT AND AGRICULTURAL TRANSACTIONS.

When the national banking law, commonly called the Federal reserve act, was under discussion in Congress the matter of farm credits was considered and debated, but it was decided that the subject as a specific program should be separately dealt with in another act. The Federal reserve act was passed with a view to the improvement of the banking conditions of the country in the interest of all classes; to the restoration of normality in banking; to the establishment of a reserve or banking power which could be utilized in times of emergency; and therefore with a view to secure good banking at all times and to prevent panics. It is not a banker's law or a business man's law or a manufacturer's law or a farmer's law; it is a law for all classes—for all the people. However, there were incorporated into the act several very important provisions which had in mind specifically the needs of the farming classes and the possibility of extending banking facilities to the rural districts.

It was specifically provided that a Federal reserve bank might "discount notes, drafts, and bills of exchange arising out of actual commercial transactions—that is, notes, drafts, and bills of exchange issued or drawn for agricultural, industrial, or commercial purposes, or the proceeds of which have been used or are to be used for such purposes." The Federal Reserve Board was given the right to define the character of paper thus eligible for discount. It was further distinctly provided that nothing in the act should be construed to "prohibit such notes, drafts, and bills of exchange secured by staple agricultural products, or other goods, wares, or merchandise from being eligible for such discount." It was provided that the ordinary notes, drafts, or bills admitted to discount should have maturity at the time of discount of not more than 90 days, but that notes, drafts, and bills drawn or issued for agricultural purposes or based on live stock might have a maturity not exceeding six months. Not only is paper arising out of agricultural transactions made eligible under the act, but it is given a longer maturing period than other forms of paper. This apparent discrimination arose naturally out of the fact that agricultural operations are seasonal and involve a longer period than ordinary commercial transactions.

Again, it is provided in the act that national banking associations not situated in the central reserve cities may lend on improved and unencumbered farm lands within the Federal reserve district, and that such loans may be made for any period up to five years. Such loans may not exceed 50 per cent of the actual value

of the property. Any national bank under this provision of the act may lend on farm lands an amount in the aggregate equal to 25 per cent of its capital and surplus or one-third of its time desposits. The Federal reserve act, therefore, so far from discriminating against the farming classes, distinctly bears them in mind, and while not discriminating in favor of them takes just and particular knowledge of their requirements.

THE BANKING HABITS OF THE UNITED STATES.

The matter of additional legislation concerning farm credits was promptly brought to the attention of Congress by the President at the regular session in his annual message, and many experts have been giving persistent and careful attention to the problem.

The explanation of why special banking arrangements were devised abroad but have not been extensively planned and operated in this country is to be found in the difference in economic, social, and banking habits and conditions. This is the only large country that may be said to have the ordinary banking habit developed in a high degree, with banking and lending associations democratized and in touch with the masses of the people. The great masses of people in a number of European countries do not have the ordinary banking habit and know little about banking practices. The habit of depositing money in banks, of checking against such deposits, and of making loans through banks in such countries is not general. This may be illustrated by a reference to the Bank of France. This bank, with a billion dollars of bank notes, has only $285,000,000 of deposits. A bank can utilize its assets either through notes or through discount and deposit and checking. In this country the assets of a bank are utilized to a slight extent through bank notes, the total volume being about $725,000,000, while the total deposits in all the banks are $17,000,000,000. This testifies to an unusual development of the banking habit among our people. Partly because of the lack of the ordinary banking habit on the part of European peoples, partly because of the lack of banking facilities, and partly because of other social and economic factors special agencies had to be devised. There was great need for some addition to their machinery. The land mortgage and the cooperative credit arrangements grew up of necessity. Likewise the savings banks were created for similar reasons. It is noteworthy that only recently have saving institutions been established in great numbers in this country, and that still more recently the Government Postal Savings System has been evolved.

LAND-MORTGAGE BANKS.

Notwithstanding the fact, however, that the people of the United States have ampler financial agencies than any other in the world, and have developed the habit of using these agencies to a greater extent than any other peoples, students of rural problems have been keenly alive to the need of further improvements. They have insisted upon extensions of the national banking facilities and the creation of special agencies in intimate touch with farmers with a special view to the betterment of financial conditions in the country. At least two definite measures have been prepared and have received special consideration. They are similar in many respects. They provide, in brief, for land-mortgage associations with a small capital, which may make loans on farm mortgages within a district of a State or within a State to the extent of 50 per cent of the real values of the farms. The money arising from such loans is to be used for productive purposes on the farm on which the security is based. It is contemplated in one way or another, either through separate associations or through a central agency, that debenture bonds may be blanketed on the mortgages and offered to the public. It is proposed that the operations of the system shall be supervised by a central agency in Washington and that there shall be adequate safeguards in the way of examination and inspection. It is thought by students of the question that such debenture bonds would be safe, would attract capital, and would bring into the investment field especially smaller holdings scattered through the country which do not now easily find satisfactory investments. A plan of this kind, operating through private funds, should work safely and would probably result in a short time in systematizing credit transactions in rural districts and in reducing the rate of interest.

The Office of Markets and Rural Organization has continued its study of rural credits. Information bearing on farm-mortgage loans has been secured from two-thirds of the savings banks, trust companies, and State and private banks in the United States. The estimated total of farm mortgages held by these banks as loans exceeds $930,000,000. This fund is very unevenly supplied. Iowa banks alone furnish nearly 100 millions. Illinois and New York approximate 85 millions each, California 67 millions, and Missouri 58 millions. In Indiana, Vermont, and Minnesota the sum in each exceeds 45 millions. The total of farm mortgages held by these banks in the 10 States of the cotton belt is approximately the same as that held by Iowa banks.

Bankers in many States, especially in the Middle West, furnish almost as much money for farm loans, through their activity as middlemen, as they do through loans from their own bank funds. In such cases the banker acts as an agent, usually for some insurance company, mortgage company, or other bank. It is estimated that approximately $565,000,000 is thus handled through members of State, private, and savings banks and trust companies.

Information secured from insurance companies shows that more than $600,000,000 of their funds are invested in farm-mortgage loans. While mainly confined at present to the corn belt, these investments are being extended into the South and West. The companies have trained field inspectors or rely upon the statements or guaranties of local agents as to land values. Insurance companies usually limit their loans to 40 per cent of the value of the security and to a fixed maximum per acre. The prevailing period of such loans is five years, with the privilege of prepayment on interest dates.

The business of existing mortgage companies in the United States is often that of agents or brokers who bring borrower and lender together and render other services connected with mortgage loans without assuming liability. Such business can be built up with very little capital. The mortgage is made out directly to the lender, who assumes all responsibility. It is evident that the market for such loans is restricted to investors who know the nature of the security, who are

willing to lend the particular amount desired, and who will assume all risks.

A limited number of companies deal in mortgages as a jobbing or merchandise business. The mortgages generally are sold after suitable investors have been found. A few of these companies retain ownership in a portion of the mortgages, deposit them with a trust company, and issue debentures secured by the mortgages as well as by the capital of the company. The debentures are issued in even amounts of $100 and upward and for varying periods, affording the investor some of the usual conveniences of bonds. However, inasmuch as the purchaser of a debenture does not know the particular mortgages used as security he must rely on the integrity and solvency of the company to protect his investment.

RURAL CREDIT COOPERATIVE ASSOCIATIONS.

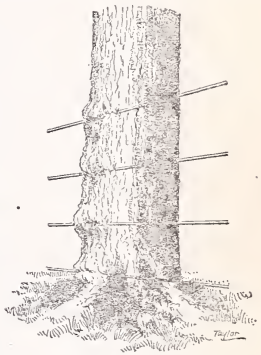
The students of rural credit recognize the desirability of another piece of legislation which may probably be had at the hands of the several States or of the Federal Government, namely, legislation authorizing and encouraging local personal cooperative credit associations. Some States have already taken steps in this direction and others are contemplating taking them. The Department of Agriculture has made earnest investigations in this field and is in position to offer suggestions as to legislation and as to the form and operations of rural credit cooperative associations. Such associations as these will perhaps render their largest service in the sections of the country where there are many small farmers whose individual resources may not be sufficient to enable them to secure the requisite credit. Their largest field for operation would probably be the South. Characteristics of such associations of small farmers are: Unlimited liability of members, the pledging of the faith of each to the other and of the whole to the lender; the use of funds for clearly defined productive purposes; and the supervision by the association of the use made of the funds. It has been objected that the feature of unlimited liability will prevent the organization of such associations in this country, but in certain sections of the Nation the liability of small farmers is already unlimited, and this could not be said to be an insurmountable obstacle.

In reference to such proposed associations, as well as to land-mortgage banks, it is of the utmost importance that attention be centered on the use which may be made of borrowed money. It is of high importance that there should be guaranties of the use of funds secured for productive purposes on the farms covered by mortgages or other obligations; otherwise the field for speculation will be opened and more harm may result than good. The investigations of the department indicate that a relatively small number of the banks of the country pay any attention whatever to the purposes for which loans are made, and in replies to inquiries many of the banks reporting did not even attempt to give data bearing on this important point.

The Office of Markets and Rural Organization has continued its investigation into the field of personal credits. From data gathered it appears that the State, private, and savings banks and trust companies supply approximately $1,000,000,000 for short-time loans to farmers and that national banks furnish $750,000,000. As may be expected because of the differences in the relative importance of agriculture in various States, these short-time loans are very unevenly distributed. The funds are used chiefly in the financing of cattle raising, feeding, and marketing, of dairying, of hog and sheep raising, and of grain and cotton growing and marketing.

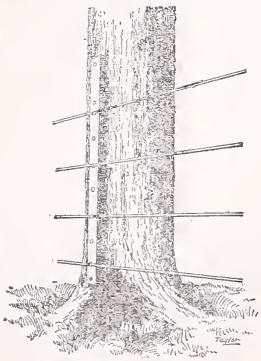
WIRE FENCING AND TREES.

In running wire fences it may be necessary or desirable to attach the wires to trees along the fence lines. In many regions old fence rows have grown up naturally to trees; in others, windbreaks have been planted between fields, making tree lines to which wire fencing may be attached without the labor and expense of setting posts.



THE WRONG WAY.

In attaching wires to trees, however, it is bad practice to fasten them directly to the trees, for when this is done the wire will be grown over and embedded within the tree itself. This has a number of disadvantages. Not only do the wounds mar the appearance of the tree, but they also afford entrance for diseases which cause decay. In the second place, if the tree is ever cut for lumber either the best part of the trunk has to be thrown out and wasted, or else, if the wires and staples are deeply embedded, the tree may be sawed into without any knowledge on the part of the sawmill men that the wires are there. The results are likely to be disastrous to the saw, and may even endanger human life. Further, it is impossible after the wire is grown over to move the fence without cutting the wire or chopping deep into the tree.



THE RIGHT WAY.

A better way, and one that protects both the tree and the fence, is to nail to the tree a strip of wood from 4 to 6 inches wide and an inch or more thick and of a length to suit the height of the fence. The wires can then be stapled to this strip. As the tree grows the strip is forced out and the tree is not injured. The strip can be nailed tighter from time to time, the wire fence always remaining stapled to it. If there is occasion to move the fence or cut the tree, the strip can be pried off without any difficulty.

CAN THE SLAUGHTER OF CALVES BE LESSENED?

The slaughter of young calves is one of the serious phases of the problem of the maintenance of our country's beef supply. Statistics indicate that the slaughter of such animals is increasing rapidly, due primarily to an increase in the demand for veal, in spite of the fact that veal is ordinarily sold at an extremely high price per pound.

These veal calves are largely drawn from the dairy districts, but, with the growth in the demand for veal, other sections are marketing as veal in considerable numbers calves that, if kept and fattened, would have made good beef steers. The market for stockers and feeders is therefore affected.

Various suggestions have been made to prevent this, even such radical ones as legislation to prohibit entirely the slaughter of calves. The fact is not always recognized, however, that this practice is purely economic. In dairy districts, milk production is the chief business and calves are an incident, valuable only to replenish the milking stock or for such revenue as may be obtained from their sale as veal. As the average dairyman must keep the number of his milkers at a maximum, economy demands that he relieve himself of his surplus calves as soon as possible. As there is not ordinarily any market for such calves except for veal, veal they become. The slaughter of calves in districts which are not exclusively devoted to dairying probably has as its governing factor a market near by which pays more for calves as veal than as stockers.

A comparison of English and American methods in this respect sheds some light on this problem. In England men make a business of buying young calves throughout the dairy districts to be raised on milk substitutes and subsequently fattened for beef. In England the dairy cows are largely Shorthorns whose calves are valuable for beef production. In the United States, on the other hand, the cows of the dairy districts are principally of the strictly dairy breeds (pure breds or grades) or natives with no breeding, and the calves from such cows have, as a rule, little value as feeders for beef, but make good veal.

As the calves in a dairy herd are not of paramount importance, a system of breeding which would increase their value for beef production would not necessarily decrease the dairy value of the herd when grade or native cows are used. If such cows were bred to beef or dual-purpose bulls, the calves would have considerable value as stockers. This practice would not be warranted, however, unless there was a near-by market for such stockers. It must also be observed that this practice necessitates raising calves by hand, largely on milk substitutes, which adds to the expense, and calves so fed are not so easily raised as where they follow the cow until weaned naturally. The labor item is likewise important, as this system demands not only a considerable amount of labor but of skill also. In England skilled farm labor is cheaper than in the United States.

Another possible solution of the problem would be an increase in mutton consumption in the United States. We consume annually per capita 7½ pounds of veal, which is 4 per cent of our total meat consumption; the people of Great Britain eat 4 pounds of veal per capita annually, which is 3 per cent of their annual per capita meat consumption. We consume 6½ pounds of mutton and lamb per capita, which is about 4 per cent of our total, whereas the British people consume 26 pounds of mutton and lamb per capita, which is 22 per cent of their annual meat consumption.

An increase in our mutton consumption at the expense of the consumption of veal would, of course, tend to make calves less valuable as veal and would encourage a system of breeding which would bring them into demand as stockers. An increase in mutton consumption would also encourage the farm raising of sheep, and this could be brought about on dairy farms without affecting the economy of management from the dairy standpoint. A small flock of sheep on a farm will increase the productiveness of the farm, keep the farm clean of weeds, and add to the family meat supply without entailing serious additional expense for feed, labor, or shelter.

REGARDING PUBLIC LANDS FOR HOMESTEADERS.

Anyone interested in public lands where the new settler may establish a homestead should write the Superintendent of Documents, Washington, D. C., for Price List 20, entitled "The Public Domain." This price list contains over 30 pages of titles of bulletins which may be had for a sum that covers merely the cost of publication. A great number of these pamphlets cost the applicant only 5 cents each and few cost more than a dollar. No money is required for postage, as Government publications go free through the mails.

Here are a few sample titles taken at random from the bulletin:

Suggestions to Homesteaders and Persons Desiring to Make Homestead Entries. Price, 5c.

Use of National Forests for Recreation Purposes. Price, 7c.

Summer Homesteads on Public Land. Price, 7c.

Homestead Entries by Minors. Price, 9c.

Vacant Public Lands in the United States. Price, 5c.

Other pamphlets listed will be of value to those interested in conservation and irrigation. There are also publications on boundaries, coal lands, desert lands, drainage, Forest Service, Indian lands, and lands in the various States, including the Philippines, Panama, and Hawaii.

Remittances should be made to the Superintendent of Documents, Government Printing Office, Washington, D. C.

Do not write the U. S. Department of Agriculture for this price list.

TO REGISTER BREEDING ANIMALS FREE FROM DISEASE.

The spread of tuberculosis by the sale of pure-bred cattle for breeding purposes has led the department to propose a plan for encouraging the breeding of registered animals free from that disease. It is unfortunate that tuberculosis exists in many fine pure-bred herds. It often happens that a man who wishes to improve the breeding of his herd will buy an animal from one of these diseased herds and unwittingly introduce tuberculosis into his own herd. The department is undertaking to establish records of pure-bred herds that are free of tuberculosis, so that people who wish to buy fine stock will know where they can be assured of getting healthy animals.

After applying the tuberculin test, which will be done free of charge, an official public record will be kept showing all herds which can be certified as free from tuberculosis, and it is proposed to publish the names and addresses of the breeders whose herds are on this record. The plan is purely voluntary. Herds will be tested only when the owners desire it and agree to the conditions. Publicity may also be given to these herds at expositions and fairs by placards upon the pens, and it is expected that separate exhibition classes will be established for such cattle.

Owners of tested herds will be expected to slaughter animals that are affected seriously, as such are apt to be dangerous disseminators of tuberculous infection. Some States provide for reimbursement for animals slaughtered under such circumstances. Arrangements may be made for retaining animals showing no clinical evidence of tuberculosis in quarantine for breeding purposes when it is desired to preserve and perpetuate certain strains.

FOOT-AND-MOUTH ORDERS EXPLAINED.

Since the publication of various orders modifying the Federal quarantines declared on account of the foot-and-mouth disease the authorities here have received numerous inquiries with regard to the exact meaning of the regulations now in force.

The quarantines which were declared at the beginning of the outbreak prohibited the shipment of cattle, sheep, other ruminants and swine into the quarantined area for any purpose save that of immediate slaughter, and prohibited absolutely the shipment of such stock out of the quarantined area. Since then the quarantines in parts of some States, notably Michigan, Illinois, Ohio, Indiana, New York, Pennsylvania, Kentucky, Iowa, and Wisconsin, have been modified so that they now permit the shipment of live stock into these areas for all purposes and the shipment of live stock out for immediate slaughter at places where the Federal meat inspection service is maintained.

Certain counties, however, have been exempted in each of these States from the privileges granted by the modified quarantine. Into these counties no stock can be shipped for feeding purposes, but in some of them stock can be shipped out after a preliminary inspection and certification by the Federal authorities. In the areas under modified quarantine various restrictions governing the shipment of carcasses, hides, hay, straw, etc., have also been removed.

DO NOT MIX TURNIP WITH HORSERADISH.

In the Service and Regulatory Announcements of the Bureau of Chemistry of the department, a statement is published that the addition of turnip to prepared horseradish will be considered an adulteration under the Food and Drugs Act, unless the product is labeled as a compound, with a plain statement of its ingredients.

In the same publication, the department expresses as an opinion that the addition of artificial color to smoked fish, as usually practiced, results in concealing inferiority and is, therefore, a violation of the Food and Drugs Act, even though the use of artificial color is declared upon the label.

FARM TIMBER SOLD TOO CHEAP.

A representative of the department recently returned from the rich Maumee River region of northwestern Ohio, where he has been studying the problems of increasing the forest wood lot product and improving the market for it. Just before he left, he asked one farmer if any timber had been sold from his place lately. The farmer replied very sadly that he had sold his timber that summer and that the buyer had got the best of him. When asked about the terms of selling, the farmer said that the buyer had hung around for two months and after they had become very well acquainted, had assured the farmer that he could estimate the value of the timber very closely. He had then made an offer which the farmer had accepted without further investigation.

The sale was made for all the timber on the 6½-acre wood lot for the lump sum of $260. The trees were very tall, clean, medium-sized, high-grade white and burr oak, with a few hickories. All were clear of limbs and were ideal timber trees. By estimating from the tops and the stumps which were left, the forester found that the tract showed a yield of nearly 14,500 board feet per acre. Allowing 10 per cent for possible defect, which is a liberal allowance for such a thrifty stand, the yield was something more than 13,000 feet. The average price of white-oak

stumpage per thousand board feet in this locality is $17, though the high grade of timber on this wood lot was worth from $18 to $20. Figuring at $17, however, the timber included in this sale was worth $1,436 as it stood in the trees; or, in other words, the farmer had permitted the buyer to secure one of his valuable farm products for $1,176 less than the farmer should have received.

The remedy for this condition proposed by the Department of Agriculture is that farmers, before they sell their wood-lot holdings, should get in touch with the State forester or the State agricultural authorities, and secure advice as to what trees should be cut and, if possible, an estimate of the amount and value of the timber to be sold. Even when it is not easy to secure the advice of a forester the farmer should at least get several bids before making a sale.

It should also be kept in mind, says the department, that the future value of the woodland tract depends on the way it is cut. To allow a local buyer to go in and take everything usually means the end of that wood lot as a source of money. On the other hand, if there is a contract which provides that certain desirable, young, thrifty trees be left to form the nucleus of a future stand, the value of the tract can be increased from one timber crop to another.

THE GOVERNMENT BOOKSTORE.

Since the publication in the News Letter of May 27, 1914 (vol. 1, No. 42) of an account of the work of the superintendent of documents, Government Printing Office, who is the Government bookseller, the following new price lists have been published:

No. 62. Commerce and Manufactures.

No. 63. The Navy of the United States of America.

No. 64. Technology in Government Documents; Standards of Weight and Measure.

No. 65. Foreign Relations of the United States.

The price lists are sent free of charge to all applicants by the Superintendent of Documents.

MAKING CONTACT FOR MARKETING BY PARCEL POST.

There are many farmers who would like to market various kinds of produce by parcel post, and there are also many town and city residents who would like to receive produce of different kinds direct from the country. One of the principal difficulties in getting parcel-post marketing started, so far as the producer is concerned, is finding a customer for what he has to market, and, with the city housewife, the finding of a farmer who can supply what she desires. The question with both producer and consumer is, "How can I make a contact in order to market by parcel post?"

The producer may get into touch with persons who desire to market by parcel post in several ways:

(1) A start may be made with an acquaintance in town or city, or such town or city acquaintance may put the producer into touch with some one who desires to market by parcel post.

(2) It is suggested that many town and city physicians have patients who need strictly fresh eggs regularly, and by making inquiry of a number of city physicians arrangements could doubtless be made not only for eggs but for many other articles as well.

(3) A small advertisement in a city paper might produce satisfactory results. A number of city and other papers are making a specialty of a parcel-post advertising column or section, which might be tried.

(4) The Post Office Department has instructed the postmasters in a number of cities throughout the country to issue a list of producers, showing what each one has to offer for sale by parcel post, these lists being distributed free to the patrons of the office. The cities which to date have been thus designated to conduct parcel-post marketing campaigns are—

Athens, Ga.	La Crosse, Wis.
Atlanta, Ga.	Lawrence, Mass.
Austin, Tex.	Los Angeles, Cal.
Baltimore, Md.	Louisville, Ky.
Birmingham, Ala.	Lynn, Mass.
Boston, Mass.	Nashville, Tenn.
Brooklyn, N. Y.	New Orleans, La.
Chicago, Ill.	Philadelphia, Pa.
Cincinnati, Ohio.	Portland, Oreg.
Cleveland, Ohio.	Providence, R. I.
Dallas, Tex.	Richmond, Va.
Denver, Colo.	Rock Island, Ill.
Detroit, Mich.	St. Louis, Mo.
Galveston, Tex.	San Francisco, Cal.
Hartford, Conn.	Seattle, Wash.
Indianapolis, Ind.	Washington, D. C.

(5) Producers who desire to develop marketing by parcel post on more than a small scale might find it desirable to go to the city, select the proper kind of a residential section, make a personal canvass of the housewives, and arrange for trial or sample shipments.

City housewives may find some of the foregoing suggestions useful in making contact with producers from whom they can secure such articles as they desire. In addition to this, they could doubtless obtain ready response to an advertisement in some county or agricultural paper circulating in a section where they know they could secure the kind and quality of produce wanted.

Much dissatisfaction has resulted from farmers asking unreasonable prices for the articles they offer for sale. It is necessary to have knowledge of what the various kinds of produce sell for in order that proper prices may be fixed. It is a little more trouble to the farmer to sell through parcel post than in the ordinary way, and it is also somewhat more trouble to the city housewife to market by parcel post. She has to attend to the ordering, the returning of empty containers or market baskets, and the making of remittances. In consideration of these facts the producer must receive a better price than he ordinarily does, and the consumer should secure a better article than ordinarily

at the same price or an article of the same quality at a somewhat lower price.

The cost of marketing a family sized quantity of any commodity is greater in proportion than that of marketing a lot of 10 or 25 barrels or a carload, and this must be considered in adjusting the price. Neither the producer nor the consumer should expect to have all the difference in price on his side; it must be divided equitably between the two, taking into consideration the cost of container, the postage, the ordinary or local price obtainable by the producer, and the retail price which would have to be paid by the consumer—as well as the extra bit of work or attention required on the part of both parties to the transaction. This fixing of a proper price is an important item in making a start and has much to do with the continuance or permanency of a direct-marketing proposition, once established.

The quality of articles supplied is also of much importance in making parcel-post marketing satisfactory. The supplying of a good-quality article will insure not only the good will and continuance of the customer but will virtually advertise itself and the shipper by being well spoken of by the housewife to her neighbors and friends; while the supplying of an undesirable or poor quality will have precisely the opposite effect.

Personal acquaintance between producer and consumer is very desirable, and if it does not exist at the start it should be cultivated at the very earliest opportunity. They should establish their business relationship upon a basis of mutual trust and confidence as soon as possible; honest representation and fair dealing are requisite to its satisfactory continuance.

38,000,000 AGRICULTURAL BULLETINS DISTRIBUTED.

The department during the fiscal year ended June 30, 1914, issued 1,152 new publications, according to the annual report of the editor. The total number of copies of these publications was 26,691,692.

In addition to these new publications, 11,494,700 copies of publications issued in previous years were reprinted, making a grand total of 38,186,392 copies published during the year.

An important change in the department's publications was the abolishing of the series of bulletins and circulars issued by the various bureaus of the department. The bureau series of bulletins and circulars were superseded by a series called Department Bulletins.

As a result of this consolidation the department now publishes four series of publications in place of the more than 40 series formerly issued. The four series are: Department bulletins, periodical publications, annual reports, and Farmers' Bulletins.

A new periodical publication was established, called the Journal of Agricultural Research, in which are published the results of the strictly scientific and technical investigations of the department.

The decisions, notices of judgment, and orders formerly issued in separate form, have been brought together in monthly Service and Regulatory Announcements for each bureau or board charged with the enforcement of regulatory acts.

The output for the year of all kinds of printed matter including publications, blanks, blank books, bound volumes, and mimeographed notices for the press reached a grand total of 84,650,458 copies.

The demand for the department's publications was so great that in addition to the vast number distributed free the Superintendent of Documents sold 231,821 copies for $21,708.76.

The demand for Farmers' Bulletins continued to increase, so that the number distributed was 44 per cent greater than in any previous year. During the year 55 new Farmers' Bulletins were issued in editions totaling 4,730,000 copies; 284 of the earlier numbers were reprinted to the total number of 10,230,000 copies, making an aggregate of 14,960,000 copies issued during the year. Of these 8,399,659 copies were distributed on the orders of Senators, Representatives, and Delegates.

WITHDRAW PROTECTION FROM EUROPEAN STARLING.

In its annual report for the last fiscal year the Bureau of Biological Survey of the United States Department of Agriculture reports as follows on the European starling:

Introduced into the United States nearly 25 years ago, the European starling has gradually extended its range from New York City and now it is found in the neighboring States of Connecticut, New Jersey, New York, Pennsylvania, and Massachusetts. During its migrations in search of food it ranges much farther from the original center and occurs in considerable numbers as far south even as the District of Columbia.

The starling is markedly insectivorous, especially in summer, and preys upon many noxious varieties. In this respect it is to be classed among our useful birds. So far as is known, it has not proved destructive to grain crops, but it is known to be very fond of small fruits, and as it associates in large flocks it is likely to become a pest to the orchardist. In addition, it prefers tree cavities, boxes, or recesses in buildings for nesting sites and thus is brought into direct competition with certain of the useful native birds, more particularly the bluebird, purple martin, white-bellied swallow, house wren, and flicker.

The bird is steadily extending its territory, and it will be wise to withdraw all protection from it, as has already been done in Connecticut, New Jersey, New York, and Pennsylvania, including the center of its abundance, with a view to checking its increase and spread. The shipment of these birds from one State to another has been prohibited under heavy penalty by act of Congress. Under ordinary circumstances even after all protection is withdrawn, the bird will probably prove to be capable of taking care of itself. That ultimately it will spread over a large part of the United States is highly probable.

In addition to studying the starling, the Biological Survey studied the economic status of many other birds, largely through the method of analyzing the food in their stomachs to determine whether their feeding habits were helpful or destructive to agriculture. As a result of this study, 11 birds were added to the lists of bird enemies of the boll weevil, making a total of 64 thus far discovered.

In the matter of the alfalfa weevil, 45 species of birds as well as frogs, toads, and the salamander, were

found to feed upon this beetle. The most active enemies of the weevil among the birds are the Brewer blackbird, the western meadow lark, the valley quail, and the English sparrow. Of vertebrate enemies other than birds, the Rocky Mountain toad renders good service in destroying breeding adult insects in spring and larvae later in the year.

An examination of the stomachs of 600 birds seems to indicate that birds are of no value as enemies of the full-grown range caterpillars. Mammals, particularly the skunk, seem to be the important enemies of this pest.

Study was given also to methods of attracting birds and encouraging them to build nests and live about human habitations. A Farmers' Bulletin telling how to build attractive bird houses and attract birds in other ways, is now in course of preparation.

The bureau also has given much attention to a study of bird migration, and is completing a bird census.

During the year permits were issued for importing 475,392 birds, among which were 368,676 canaries, 36,760 partridges, and 4,148 pheasants. There was a noticeable increase in the importation of partridges, as a number of States, including Iowa and Oregon, are experimenting in the introduction of these game birds for restocking purposes.

THE INDOOR WINDOW BOX.

The indoor window box, properly planned and tended, will afford much pleasure and satisfaction to the housewife who misses her out-of-door garden during the winter months. It is a mistaken notion that plants when kept in living rooms use up certain elements of the air in such quantities as to make it unhealthful for individuals using the room. It is much harder on plants to be in a room with people than for people to be in a room with growing plants. Plants, indeed, use air, but use such a small proportion that the effect of the plant in the room is negligible if the room is ventilated at all. This also holds good for cut flowers or plants in a sick room, although the odor of some flowers may be depressing to the patient, and bad for that reason.

A good depth for an indoor window box is about 12 inches. The bottom of the box should be covered with stones and broken pottery to give drainage and this should be covered by a layer of moss to prevent the soil above from working down through the stones. The drainage and moss should take up about 3 inches. The greater the body of soil above the moss the more uniform it may be kept as to moisture. The soil should come to within an inch and a half or 2 inches of the top of the box.

The indoor window box should be made to fit into the window. To get as much light as possible it should be level with the window. It may be fastened with brackets or placed on a table, or have legs made for it. There should be a drip pan beneath to keep water from soiling the floor. The box may rest directly above the drip pan on legs half an inch to an inch high or the box may be water-tight with the exception of a hole at one end to let out the water.

The top of the soil should be allowed to become quite dry once in a while. The results of watering will teach the owner to regulate the supply. Boxes may need watering in sunshiny weather (especially toward spring) every day, or at least every other day; in cloudy midwinter weather not more than once a week. As a rule it is better to water lightly and frequently than heavily and infrequently. The specialist of the department advises this, although just the reverse is considered best when watering is done out of doors in the summer.

FOLIAGE, NOT FLOWERS, FOR WINDOW BOX.

A large proportion of the plants in a window box should be of the same general character if the growth is to be successful. Plants of different character need different treatment. It is very difficult to raise flowering plants in a window box with the exception of begonias. Ordinary flowering plants are very exacting, and will not find enough light in the ordinary living room, even though placed near the window, although they may do well in a conservatory. The main object of an indoor window box is to furnish the fresh appearance of growing green leaves rather than to raise flowers indoors.

The department's specialist makes the following suggestions for a window box:

Begonias are one of the most attractive plants that may be used for an indoor box. Both flowering and nonflowering varieties will give satisfaction; in fact, the flowering variety is one of the few plants that will blossom indoors without special cultivation. The begonia is not very particular in its requirements and will flourish with ordinary care.

Small ferns obtained from a florist will flourish. These are particularly adapted to house culture, as they do not require direct sunlight. (Care of ferns will be described in greater detail in a subsequent article.)

Even more hardy than ferns is the foliage plant known as the aspidistra. This adaptable plant-growth will stand a measure of neglect, drought, and dust and still thrive. It does not require direct sunlight.

Geraniums may also be used as foliage plants, though they must not be expected to blossom in the window box.

Kenilworth ivy may be planted along the edge. It will grow nicely from seed.

Smilax may be grown from the back of the box and trained up about the window to give the effect of an attractive bower.

The inexperienced grower of plants indoors can not expect to do well with roses. These plants are most exacting, and not only will they probably fail to flower, but also their foliage may be affected by mildew, blight, etc.

The ordinary individual who desires other varieties of growing flowers may supplement his window box with flowering potted plants brought in from outside, including bulbs raised as described in a previous article of this series. These will probably keep their bloom for a brief period only. People who are fond of plants will, of course, obtain better results with blooming varieties after many trials. Some have dealt with very difficult problems, which they have solved successfully, but the present suggestions are meant for the novice as well as the more experienced grower.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1914

Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

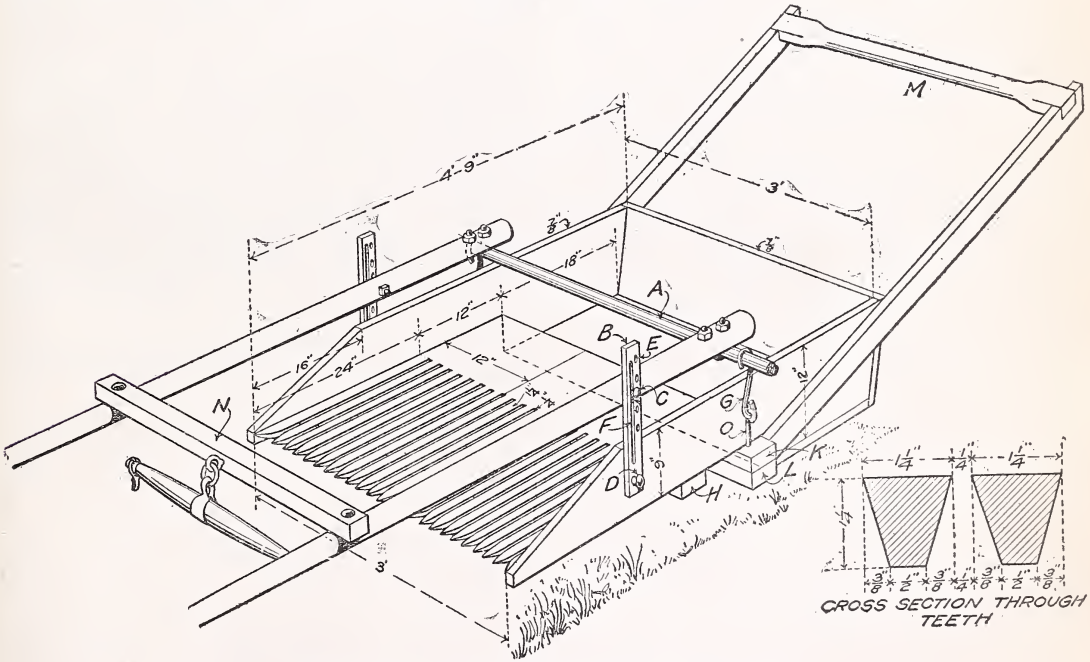
ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

VOL. II WASHINGTON, D. C., DECEMBER 30, 1914 No. 21

HOMEMADE DEVICE FOR GATHERING CRIMSON CLOVER SEED.

A homemade device for gathering crimson clover seed, which the southern farmer may make and use with a very small outlay of time and money, is described in a bulletin soon to be issued by the department which may be had free of charge by applicants. The uncertainty of the foreign supply of crimson clover seed and the present high price of this article have made its extensive use impracticable to many farmers. The new device promises a solution of the problem of annual reseeding, which will make the southern farmer independent of any foreign supply. A copy of the working drawing of the stripper which is given herewith is being sent to every one of the department's county agents in crimson clover sections. The stripper is the invention of one of the department's specialists, who is giving his work to the American people, and any farmer is free to make it for himself.

The handicaps under which crimson clover seed production in this country has labored have necessitated the importation of from three to five million pounds of seed annually. The farmer on the ordinary farm may make arrangements to save his own seed for reseeding purposes by the use of this simple device, which is made as follows:



WORKING DRAWING OF CRIMSON CLOVER SEED STRIPPER.

This stripper is designed to be hung on the axle A between two wheels, which, however, are not shown in the drawing. The iron hooks G are used for attaching the stripper to the axle. The hook G should be of such length as to allow the bottom of the stripper to miss the ground by 6 inches. The handle M permits the teeth to be raised or lowered to catch the heads at the proper height. The limits through which teeth may be raised or lowered are fixed by means of the slot F. This prevents either the front or back of the machine tilting enough to strike the ground. When it is desired to hold the stripper rigid the removable bolt C can be taken out and inserted in one of the holes E. Bolt D should fit loosely in the bottom of board B to permit easy action of the attachment. It is necessary to have the plank N to which the whiffletree is attached fastened to the shafts far enough in front of the teeth to prevent the horse's hoofs from coming

in contact with the teeth of the stripper. The teeth are sawed out of oak boards, which in turn are nailed to planks H and K.

The commercial production of crimson clover seed in this country is especially handicapped by frequent untimely rains which occur after the crop is cut and before the services of a huller can be obtained. A considerable acreage in a given locality is required to justify the presence of a huller in that vicinity. Where it is not desired to raise seed for commercial purposes the simple devices, some types of which can be made on the farm from readily available material at the expenditure of a few dollars, make it possible for anyone with a crimson clover field to obtain seed for reseeding purposes.

The comb stripper illustrated herewith can be of any desired size ranging from 1 foot to 10 feet in width, depending on the quantity of seed to be gathered. The hand-swung strippers are usually about 1 foot wide with the teeth 10 inches long. The particular stripper illustrated is 3½ feet wide. This is a convenient size where seed for 3 to 20 acres is desired. Where seed for less than 3 acres is to be gathered it can be stripped by one of the hand-swung strippers or even by hand, especially if cut by hand, although the operation is somewhat slow. The stripper 3½ feet wide can easily be swung on the axle of the wheels taken from an old buggy, between the hind wheels of a buggy, or even between the hind wheels of a farm wagon. This width is especially recommended when the special fields on which it is to work are in sections not connected by wide roads. This machine can be taken along any ordinary wagon road on its own wheels. If necessary, one man and a horse can operate the machine to good advantage, although a boy to assist in bagging the seed and cleaning the teeth when they become choked up is advisable. The wider stripper may be swung between hayrake wheels or set up on wheels of iron or wood. If these wheels be 18 inches or less in diameter, the stripper can be placed above the axle. It is necessary that the seed be fully ripe in order to strip easily, and it is also desirable that the ground be given level tillage in order to facilitate the operation of the stripper.

Too much emphasis can not be laid on the importance to the individual farmer throughout the Middle Atlantic and Southern States of the seeding of largely increased acreages of crimson clover or similar winter legume cover crops.

URGE FARMERS TO PROTECT COTTON FROM "COUNTRY DAMAGE."

To prevent what promises to be an unusal amount of "country damage" to cotton this year, the cotton-marketing specialists of the department are urging farmers and others to warehouse their cotton, or, if this is impossible, to build temporary sheds to protect it. They state that even under normal conditions our baled cotton suffers injury to the extent of many millions of dollars in value from what is commonly called "country-damage." Owing to the war in Europe, the present crop can not be marketed readily, and an unusually large amount of cotton, they point out, is lying unprotected around gins and on the producers' premises. The aggregate amount of country damage, therefore, they say, is likely this year to be far greater than usual, and in view of the fact that there is such a large surplus, spinners and exporters will unquestionably discriminate sharply against damaged cotton.

They particularly urge farmers to depart from their usual custom and protect their cotton, and ask the factors to offer the very best terms possible. The following is a statement by the specialists of the measures to protect cotton which they believe to be of special importance this year:

"It is generally believed that many new warehouses should be built in order to house the crop; but a careful investigation by the Office of Markets indicates that if all the warehouses at the ports, in the interior, and belonging to the cotton mills were used, every bale of cotton produced this year could be stored without the erection of additional buildings. This does not mean that the present facilities are adequate or always available to the persons who are in the most serious need of them. The best storage houses are generally located at the ports and the large interior towns, and are usually under the control of factors or commission merchants who operate them primarily in order to increase their volume of business. In order to store cotton in these buildings it is usually necessary for the farmer to pay charges for selling, weighing, etc., whether he wishes the service of the merchant in the transaction or not. It is also true that very few of the cotton mills are willing to open their warehouses for the accommodation of those who wish to store cotton. Again, the farmer is frequently not willing to ship his cotton to one of the large towns to have it stored, and is averse to paying any charges. The small warehouses located in towns and villages pay very high insurance rates, and their business is on such a small scale that the cost of handling is necessarily much higher than for companies which do a large business.

"But notwithstanding all of these difficulties, cotton should be stored. For his own protection the farmer should be willing to depart from his usual custom in the present emergency. Factors should offer the very best terms possible. This would not only be patriotic on their part but it would enable them to establish business connections which would unquestionably prove to be good investments. For similar reasons, and to help avert a serious economic loss, the mills should allow the freest possible use of their storage facilities.

"Notwithstanding all handicaps, there are some advantages in placing the cotton in the hands of factors in the larger markets. They are prepared to store cotton economically, having buildings which carry very low insurance rates, and their cost of handling is comparatively low. A competent factor or commission merchant can usually sell the cotton to better advantage than the farmer or small merchant.

It is usually possible to borrow money on cotton on better terms when stored in such centers, and this is another reason why cotton should be stored. Few individuals and comparatively few banks are willing to advance money on cotton when it is not properly housed and insured. Those who do so are taking a certain amount of risk, and almost invariably charge much higher rates of interest than the owner of the cotton need pay if his cotton is properly stored. It is also understood that no part of the $135,000,000 subscribed by the bankers of the country to be loaned on cotton at 6 per cent will be advanced on cotton which is not properly warehoused and insured. As the season of inclement weather is at hand, it is important that cotton be stored before it becomes seriously damaged.

"Where the cost of storage is too high it is possible to build temporary sheds. The Southeastern Underwriters' Association has plans for such sheds. A group of these small units with a storage capacity of 1,080 bales will cost from $950 to $1,100, varying with local conditions. The insurance on cotton in such sheds in villages and small towns will not exceed $1 per bale per annum at the present price of cotton. This makes it possible to construct such a shed and pay the insurance for the period of one year at not exceeding $2 per bale capacity. While permanent storage buildings, conforming in every way to the standards of the underwriters associations, are desirable, these sheds, under certain conditions, may be erected to great advantage.

"If cotton can not be regularly stored, it should at least be kept off the ground and where possible under a shelter. If it must be subjected to the weather it should be placed on poles or other timbers that will keep it at least 6 inches above the ground and should be laid on edge so that it will offer the greatest possible resistance to rain."

HOW THE FARMER MAY UTILIZE THE FACILITIES OF THE UNITED STATES DEPARTMENT OF AGRICULTURE.

(*Continued from Vol. II, No. 18.*)

Office of Farmers' Cooperative Demonstration Work.

This office supervises for the department what is known as farm demonstration work, including boys' club work and girls' canning club and home economics work, in 15 Southern States, including Maryland and Oklahoma. With one exception the work is carried on in each State in cooperation with the State agricultural college. The States, counties, other colleges and schools, agricultural and commercial organizations, railways, and other agencies within the States also cooperate with the department and the agricultural college in paying salaries of county agents, and in many other ways.

This work was begun in Texas in 1904 as part of the department's campaign against the Mexican cotton-boll weevil. It rapidly developed into a comprehensive system for giving agricultural instruction to farmers and their families on their own farm. At the present time there are employed in this work, outside of the District of Columbia, 1,192 agents, working in 720 counties. Of this number, 833 are men, working with adult farmers and boys, and 359 are women, engaged in the girls' canning club and home economics work. Approximately 100,000 adult farmers and about an equal number of boys, women, and girls on the farm received direct instruction and did definite work of some kind under the supervision of this office and its corps of agents during the year 1914. The work is carried on largely through personal contact with farmers and their families, on the farms and in the homes; by means of definite object lessons, called demonstration farms, and through local organizations, such as farmers' clubs and boys' and girls' clubs.

This is one office of the Bureau of Plant Industry which does not conduct experiments or do any kind of research work. Its sole object is to disseminate among farmers, and get into common use, the store of agricultural information already accumulated at the colleges, the department, and by the best farmers. Cooperating with all other bureaus and offices of the department and with the experiment stations and colleges, it has grown to be, to a large extent, the field-service arm of these institutions in this territory.

It is impossible to enumerate all the activities of a county agricultural agent. A partial list may show how farmers can utilize the facilities of this office of the department.

Demonstration farms.—These are a fundamental part of his work and vital to its success. They are tracts, usually from 5 to 50 acres in extent, on which the farmer, with his own labor and entirely at his own expense, undertakes to grow some particular crop under the agent's careful supervision. Any crop may be grown, the selection depending on the needs of the community and the lesson to be taught. Careful account is kept of all operations and expenses and a full report made at the end of the season. Each agent is required to arrange for as many of such farms as he can properly supervise. The usual number in a county is from 25 to 50. They must be well distributed and as publicly located as it is possible to get them.

Each farm is an object lesson, intended to show some definite, concrete achievement; is calculated to arouse interest and friendly rivalry among farmers in that community, and to gain the confidence of indifferent farmers by proving that the agent knows what he is about, and that it pays to follow his instruction. Such farms afford an especially effective way for teaching better cultural methods and the value of and how to grow hitherto untried crops, such as alfalfa, the various legumes, etc. In the same way, live-stock demonstration farms are established to promote this industry in the South. Cooperating with the teachers in rural schools and other agencies, he also organizes boys' corn clubs, clover clubs, pig clubs, or other junior clubs suited to the agriculture of the particular section. Definite instruction and assistance is given the members of such clubs at meetings and by letters and personal visitation.

Field meetings.—On such demonstration farms meetings are held at convenient times to which farmers in the community are invited. With the agent they go over the farm and informally discuss the operations in progress and the results expected or secured. At such meetings with the help of cooperating farmers various farm operations and processes are sometimes demonstrated. The novelty of farmers meeting together out on a farm to discuss actual conditions and operations attracts to the meeting indifferent farmers who would never attend an institute or farmers' meeting of the usual kind. Demonstration farms and field meetings are most effective means of reaching all classes of farmers, arousing their interest, and securing their cooperation.

Demonstration of methods and processes.—At field meetings, special meetings, and on individual farms demonstrations showing how to do certain things about the farms are frequently given. Among other methods and processes taught in this way are: The use of improved implements and farm devices; better methods of cultivation; orchard management, pruning, spraying, grafting, and budding; pulling, burning, or blasting stumps; how to use the Babcock tester and the cream separator; uses of the farm level; terracing to prevent erosion; laying draintile; testing soil for acidity; how to build silos and dipping vats, and various farm buildings; vaccination of hogs to prevent cholera and of cattle to prevent blackleg; how to caponize, castrate, and any other farm operation or process which may be made the subject of definite demonstration.

Promotes rural organizations.—To extend his work and develop rural leadership, the county agent encourages and promotes helpful rural organizations of various kinds. Farmers' clubs, seed breeding, live stock and truck growers' associations, cow testing associations, poultry clubs, shipping clubs, and local associations for cooperative buying, particularly of fertilizers, pure-bred seed, or live stock for breeding purposes, are examples of organizations most frequently promoted. He endeavors to make use of all existing rural organizations or agencies, and to coordinate their activities so that all may work unitedly and efficiently. Such organizations are extremely helpful in extending the influence and furthering the work of county agents and in developing a helpful spirit of cooperation among farmers in each community.

Gives advice and instruction to farmers generally.—Such instruction may pertain to any activity on the farm or of rural life. How to grow, fertilize, or cultivate various crops; methods of combating plant diseases and insect pests; the care, management, and feeding of live stock; the prevention or control of diseases of live stock, and rotation of crops and systems of farm management are but a few of the subjects on which his advice and help is sought and given. Much of this help is given by putting the farmer in direct touch with the expert at the agricultural college or of the department, who is particularly qualified to help him, and by the distribution of bulletins and circulars of these institutions dealing with the particular subject on which advice is sought. The agent is the link connecting the farm with the experiment station, the agricultural college, and the United States Department of Agriculture.

Women and girls' work.—Women and girls' work is conducted by women county agents, supervised by the central office. It was begun in 1910, and is the logical outgrowth of the work with men and boys. The woman county agent is to do for women, girls, and the home what the farm demonstration agent does for the men and boys and the farm. The aim in each case is to get done some definite worth-while things, which teach a lesson and inspire to greater achievements. In the girls' canning-club work the girls are instructed how to grow tomatoes and other vegetables on one-tenth of an acre, and how to can, preserve, pickle, and in other ways utilize the products. Winter garden clubs and poultry clubs have naturally followed the work in canning and summer gardening. Bread making and many other forms of home-improvement work have also been taken up. This work trains girls to become efficient home makers, develop the resources of the farm, to improve the quality of the country life, and to become economically independent. From the girls' garden to the mothers' kitchen and the home is a short and easy step. The work with girls has opened the way for systematic home-economics work in the rural home, and has developed the logical organization and methods for doing this work.

Farmers in any of the 720 counties of the South having local agents should not fail to get in touch with such agent and secure his assistance in building up and improving the farm. Encourage the boy and girl to join their respective clubs and cooperate with the college and the department in this work in every possible way. Where there is no local agent, farmers desiring this help should write to the director of extension work of the agricultural college, to the State agent, or to the Washington office.

Numerous applications are being received for the series of reports relating to the condition of farm women now in course of preparation by the department. Due notice will be given when these bulletins are available for general distribution. It is not expected, however, that this will be the case for at least several months.

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Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

VOL. II WASHINGTON, D. C., JANUARY 6, 1915 No. 22

THE TWO-FAMILY GARDEN.

The garden spot is the most productive fraction of an acre on most farms, yet on many it is often one of the most neglected in many respects. In the hurry and rush of the spring work it is manured possibly, and plowed and planted, or partly planted, and then the care of it falls to the women and children. If the farmer were to carefully consider the proportion of the family living that comes from the garden, he would realize that it deserves much more careful attention than it receives from him.

Not only can the garden be made much more profitable, and help out the family ration by increasing it and also by balancing it somewhat better, but it can be made a means of considerable supplement to the income received from the principal farm industries. By having a two-family garden—that is, raising garden stuff enough for two families and finding a customer in town or city who would like to have garden (and other) products direct from the farm at least once each week—more could be realized from the farm, both for the family table and the family purse. Many a town or city housewife would be glad to receive a good-sized market basketful of fresh garden stuff directly from the producer by parcel post, express, or direct delivery by the farmer's own conveyance—whichever would prove the most satisfactory and economical.

While there is quite a list of vegetables that can be grown in practically any garden, yet very many gardens are limited to a comparatively small number of vegetables, a few others being included rather incidentally. In undertaking to conduct a two-family garden one of the first things of importance is to secure contact with the town or city consumer to be supplied. This is important because the city family has probably been using many kinds of vegetables that the farmer has not raised, at least not in any quantity, and the plans for next year's garden should be begun as early as possible. The kinds of vegetables to be raised should be decided upon after learning the quantities and kinds used by the city family concerned, good seed secured in plenty of time, and such work done toward the preparation of the garden as the weather will allow. Winter vegetables, as well as those used direct from the garden in summer, should be kept in mind. These include not only such as dry navy, kidney, and lima beans, but also lettuce, kale, spinach, cabbage, celery, carrots, turnips, and the like, depending on the particular section of the country. (For instructions and details on gardening, see United States Department of Agriculture Farmers' Bulletins 255 and 460.) As stated above, the town or city consumer will likely desire vegetables that are not now particularly used or cared for by the farm family, but the aim should be to produce that which would be desired by the customer as well as that desired by the farm family if the plan is to succeed.

In planning for a two-family garden, not only should the different kinds of vegetables be provided for but particular attention should be paid to the desires of the customer with reference to quality. Many city housewives, for instance, may desire stringless beans; when they ask for these they have in mind more a quality than a varietal name, and if they ask for stringless beans and are assured that they can receive them, and then when they come to use them find that they have strings, they will not only be disappointed to a considerable extent but discouraged at the idea of direct marketing as being preferable to securing their vegetables in the ordinary way from the city market or grocery store. While it will not be possible to cater to all the whims of the would-be consumer, it must be kept in mind that the farmer's family usually takes such quality as is produced without any particular questioning, but when a city consumer orders from a farmer he expects to get produce of a quality which he has in mind, and every endeavor should be made to meet his reasonable requirements so that the business may be established upon a mutually satisfactory working basis. Give a purchaser what he or she wants and is willing to pay for.

Not only will this plan provide an outlet for vegetables (and it is practically as easy to raise vegetables for two families as for one), but it will also establish a contact through which various other farm products may be marketed.

BLACKLEG VACCINE FURNISHED TO NATIONAL FOREST CATTLEMEN.

Persons who graze cattle on the national forests are daily making a large number of requests of forest officers for blackleg vaccine, which is supplied free of cost to those who have cattle grazing permits. The vaccine is furnished by the Department of Agriculture.

For several years past the department has furnished free to cattlemen who are permittees on the forests this blackleg vaccine, in order that they may protect their herds from the losses caused by the disease.

Before vaccination against blackleg was introduced the annual losses to the stockmen were very heavy, in some cases running as high as 50 per cent of an owner's calf crop. The disease is confined principally to animals between the ages of 6 and 18 months, comparatively few being attacked after they are a year and a half old. Calves vaccinated before they are 6 months old are not rendered immune for more than a few months and must be revaccinated, hence stockmen wait until their calves are past that age before vaccinating. A better practice is to vaccinate the calves at the age of 4 to 6 months, again at 1 year of age, and still again one year later.

Vaccination, however, is not a cure for animals already infected with the disease, though it prevents a healthy calf from becoming infected. The disease appears to be most prevalent during the fall months, but where vaccination is followed regularly the annual losses from blackleg have been practically eliminated.

PARTIAL LIST OF PUBLICATIONS ISSUED SINCE JULY 1, 1913.

(Complete list may be obtained from Division of Publications, Department of Agriculture, Washington, D. C.)

No publications are sold by the Department of Agriculture; therefore do not send money to this office.

Copies of publications listed herein will be sent free upon application to the Editor and Chief, Division of Publications, Department of Agriculture, Washington, D. C., as long as the supply lasts. The editions of most of those enumerated are exhausted.

When this department's supply is exhausted, publications can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., by purchase only, and at the prices noted herein.

Send all remittances to the Superintendent of Documents direct. His office is not a part of the Department of Agriculture.

Alabama, Fattening Cattle in. (Department Bulletin 110.) Price, 5 cents.

Alabama, Raising and Fattening Beef Calves in. (Department Bulletin 73.) Price, 5 cents.

Alfalfa Seed, Commercial Turkestan. (Department Bulletin 138.) Price, 5 cents.

Alfalfa Seed Production: Pollination Studies (Department Bulletin 75.) Price, 5 cents.

Alfalfa, Weevil, Birds in Relation to (Professional Paper.) (Department Bulletin 107.) Price, 15 cents.

Alum in Foods. (Professional Paper.) (Department Bulletin 103.) Price, 5 cents.

Apple Powdery Mildew and Its Control in the Pajaro Valley (Department Bulletin 120.) Price, 10 cents.

Arizona, Growing Egyptian Cotton in the Salt River Valley in. (Farmers' Bulletin 577.)

Arsenical Dipping Fluids, Laboratory and Field Assay of. (Professional Paper.) (Department Bulletin 76.) Price, 5 cents.

Bean Growing in Eastern Washington and Oregon and Northern Idaho. (Farmers' Bulletin 561.)

Bee Cluster, the Temperature of the Honey Bee Cluster in Winter (Department Bulletin 93.) Price, 5 cents.

Bee Colony, The Temperature of. (Professional Paper.) (Department Bulletin 96.) Price, 5 cents.

Bee Diseases, Infections, Destruction of Germs of, by Heating. (Department Bulletin 92.) Price, 5 cents.

Beef Production in the South. (Farmers' Bulletin 580.)

Beef, Production of, in the South. (Separate 627, from Yearbook 1913.) Price, 10 cents.

Bird Houses and How to Build Them. (Farmers' Bulletin 609.)

Birds, in Relation to the Alfalfa Weevil. (Professional Paper.) (Department Bulletin 107.) Price, 15 cents.

Birds and Game, Directory of Officials and Organizations Concerned with the Protection of, 1914. (Biological Survey.) Price, 5 cents.

Bollworm, The Pink. (Bureau of Entomology.) Price, 5 cents.

Bouillon Cubes: Their Contents and Food Value Compared with Meat Extracts and Home-Made Preparations of Meat. (Department Bulletin 27.) Price, 5 cents.

Boys' Pig Clubs, with Special Reference to Their Organization in the South. (Farmers' Bulletin 566.)

Brick, Vitrified, as a Paving Material for Country Roads. (Department Bulletin 23.) Price, 10 cents.

Bridge Construction, Object Lesson in Experimental Roads and, 1912-13. (Department Bulletin 53.) Price, 5 cents.

Bridges, Steel Highway, Typical Specifications for the Fabrication and Erection of. (Circular 100, Office of Public Roads.) Price, 5 cents.

Bulb Growing, Experiments in, at the United States Bulb Gardens at Bellingham, Wash. (Department Bulletin 28.) Price, 5 cents.

Cacti, Behavior Under Cultural Conditions of Species of, Known as Opuntia. (Department Bulletin 31.) Price, 10 cents.

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THE FARMER'S INCOME.

Just how much does the average farmer make? The answer to this puzzling question has been long sought by agricultural experts, since it is the ultimate test of all systems of farm management. It is simple enough to calculate the cash profits received in the course of the year, but these do not measure the farmer's success. The farm supplies him with much besides money—with food, shelter, and fuel. For these things the city worker has to pay out a large part of his wages. They must, therefore, be included in any just estimate of the farmer's income. In other words, the city worker is paid entirely in cash, the farmer partly in cash, partly directly in the necessities of life.

To obtain fuller knowledge of the value of this direct contribution from the farm the department has recently concluded an investigation which included 438 farm families divided among 10 States in different sections of the country. (United States Department of Agriculture Farmers' Bulletin 635.) The investigators found that on these farms the cost of maintaining each grown person was on the average $176 a year. This sum was composed of the following items:

Dairy products	$21
Pork	12
Poultry and eggs	12
Garden	10
Beef	6
Fruit	6
Wood and coal	13
Groceries	22
House rent	28
Labor	46
	176

Of this sum only about 22 per cent was paid out in cash. The remainder was furnished by the farm, not in the form of money but in those things for which the money would have been exchanged. The extent to which a farm can thus be made self-sustaining, made to supply the wants of the family that lives upon it with outresorting to buying and selling, is indicated by conditions in the particular area of North Carolina included in the investigation.

The investigators found that in this area the average annual value of the food, fuel, oil, and shelter enjoyed by the farm family was $505. Of this sum the farm furnished directly $429, leaving only $76 to be bought.

Food was, of course, the principal item. This amounted to $401.93, of which $330.65, or 82.3 per cent, was raised on the farm. If it had not been, indeed, for such articles as tea, coffee, sugar, salt, and other groceries which it was impossible to produce at home these farms might be called actually self-sustaining. Of the animal products consumed—meat, poultry, milk, eggs, cheese, etc.—97.3 per cent were home grown; of the fruits 98 per cent and of the vegetables 96.1 per cent. Of the other articles consumed, however, and classed together as groceries, only 24 per cent was raised on the farm. The grocery bill was therefore the largest item in the cash expenditure.

This was even more apparent in other sections where the farms were less nearly self-sustaining than in this particular area of North Carolina. The bulk of the groceries was always bought but the total quantity consumed depended to a great extent upon the quantity of animal products and vegetables raised on the farm. Where these abounded the consumption of groceries diminished. From this it would seem that an obvious way to effect an important saving in expenses is to raise more vegetables and animal products on the farm. Whether it is better to cut down expenses in this way or to increase receipts by concentrating attention on cash crops is one of the great problems in farm management the answer to which in each individual case depends upon local conditions. In the past, however, many farmers have not realized the existence of the alternative. The two other important items in the cost of maintenance are house rent and labor. Both of these it is a common error to overlook in estimating the farmer's income. Since the house usually goes with the farm and the labor is performed by members of the family, both are taken for granted. This, however, is obviously unfair. In the recent investigation, for example, the investigators found that $125 was a fair rental charge for the average farmhouse, including interest, depreciation, and repairs. The fact that the farmer does not have to pay out this sum is equivalent to adding $125 to his income. With labor it is much the same. The members of the family secure by their work comfort which they would otherwise have to buy; or to put it another way, if they did the work for somebody else they would be paid. As it is they pay themselves.

It is obvious, therefore, that what the farm furnishes directly in food, in fuel, in shelter, and in rent is an important part of the farm family's income. On the other hand it must be remembered that the farmer has capital invested in his business, the interest on which must be earned before he can truly be said to be making money. In the proper relation of the three factors—interest on the investment, cash receipts, and direct income from the farm—lies the secret of successful farming.

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UNITED STATES DEPARTMENT OF AGRICULTURE

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THE FUEL VALUE OF WOOD.

The fuel value of two pounds of wood is roughly equivalent to that of one pound of coal. This is given as the result of certain calculations now being made in the forest service laboratory, which show also about how many cords of certain kinds of wood are required to obtain an amount of heat equal to that in a ton of coal.

Certain kinds of wood, such as hickory, oak, beech, birch, hard maple, ash, elm, locust, longleaf pine, and cherry, have fairly high heat values, and only one cord of seasoned wood of these species is required to equal one ton of good coal.

It takes a cord and a half of shortleaf pine, hemlock, red gum, Douglas fir, sycamore, and soft maple to equal a ton of coal, and two cords of cedar, redwood, poplar, catalpa, Norway pine, cypress, basswood, spruce, and white pine.

Equal weights of dry, nonresinous woods, however, are said to have practically the same heat value regardless of species, and as a consequence it can be stated as a general proposition that the heavier the wood the more heat to the cord. Weight for weight, however, there is very little difference between various species; the average heat for all that have been calculated is 4,600 calories, or heat units, per kilogram. A kilogram of resin will develop 9,400 heat units, or about twice the average for wood. As a consequence, resinous woods have a greater heat value per pound than nonresinous woods, and this increased value varies, of course, with the resin content.

The available heat value of a cord of wood depends on many different factors. It has a relation not only to the amount of resin it contains, but to the amount of moisture present. Furthermore, cords vary as to the amount of solid wood they contain, even when they are of the standard dimension and occupy 128 cubic feet of space. A certain proportion of this space is made up of air spaces between the sticks, and this air space may be considerable in a cord made of twisted, crooked, and knotty sticks. Out of the 128 cubic feet a fair average of solid wood is about 80 cubic feet.

It is pointed out, however, that heat value is not the only test of usefulness in fuel wood, and since 95 per cent of all wood used for fuel is consumed for domestic purposes, largely in farm houses, such factors as rapidity of burning and ease of lighting are important. Each section of the country has its favored woods, and these are said to be, in general, the right ones to use. Hickory, of the nonresinous woods, has the highest fuel value per unit volume of wood, and has other advantages. It burns evenly, and, as housewives say, holds the heat. The oaks come next, followed by beech, birch, and maple. Pine has a relatively low heat value per unit volume, but has other advantages. It ignites readily and gives out a quick hot flame, but one that soon dies down. This makes it a favorite with rural housekeepers as a summer wood, because it is particularly adapted for hot days in the kitchen.

The fuel qualities of chestnut adapt it particularly to work in brass foundries, where it gives just the required amount of heat, and it is therefore in favor. Coastwise vessels in Florida pay twice as much for Florida buttonwood as for any other, because it burns with an even heat and with a minimum amount of smoke and ash.

The principal disadvantage of the resinous pines is their oily black smoke.

POOR QUALITY OF BUTTER OFTEN CAUSED BY LACK OF THOROUGH COOLING OF CREAM.

One of the most common causes of poor-quality butter is the lack of immediate, thorough cooling of the cream after separation. The Dairy Division of the department has made a careful investigation of conditions on a large number of dairy farms, and the data obtained show that, if properly cooled, cream of the best grade can be produced with but little extra labor or expense. The principles involved are very simple and are easily understood.

A liberal use of ice which has been stored in winter to be used the following summer is one of the requirements for the solution of the poor-butter problem. Farmers who are already successfully delivering good products to the creamery have usually provided for themselves a convenient source of supply for the ice, suitable houses for storing the ice, and ice-water tanks for the immediate cooling of the milk and cream. In parts of New England, although the dairymen often hold cream on the farm four days in the summer and seven days in the winter, they deliver practically all their product while sweet. After it reaches the creamery it is pasteurized and shipped a distance of from 50 to 300 miles, and may still be sold in these remote localities in the form of sweet cream.

The expense connected with the liberal use of ice in this connection is so small and the result so satisfactory that details have been compiled for the consideration of those interested in dairying and are now issued in the form of a new Farmers' Bulletin (No. 623) entitled: "Ice Houses and the Use of Ice on the Dairy Farm." The bulletin should be useful in dairy sections where natural ice is obtainable. Plans and specifications for ice houses are given.

In its general summary the bulletin makes the following 10 suggestions:

(1) Wherever ice is abundant the cost of harvesting and storing is usually very small.

(2) If a stream of water is available, a small ice pond can generally be constructed on the farm by building a dam.

(3) In building an ice house care should be taken to provide for proper drainage and ventilation. The drain should be efficiently trapped to prevent air from entering the house through the drain.

(4) The efficient insulating of ice houses is of the utmost importance, consequently great care should be exercised in the selection and installation of the insulating material.

(5) About 40 cubic feet of space should ordinarily be allowed for a ton of ice. A cubic foot of ice weighs about 57 pounds.

(6) Under general conditions about 1 pound of ice will be required to cool and keep 1 pound of cream in good condition until delivered to the creamery when deliveries are made three times a week.

(7) When storing ice, about 50 per cent more should be packed than is actually needed. This amount allows for a heavy shrinkage and for household uses.

(8) The dairy farmer should provide annually one-half to 1 ton of ice per cow for cooling cream only and 1½ to 2 tons per cow if whole milk is cooled, depending upon the locality and other factors.

(9) If a cake of ice is kept floating in the water surrounding the cream cans when the ordinary cooling cans are used, the temperature will remain at about 40° F.

(10) Good ice-water tanks can usually be constructed for from $5 to $20.

DEPARTMENT RECOMMENDS OPHTHALMIC MALLEIN FOR THE DIAGNOSIS OF GLANDERS.

In Professional Bulletin No. 166 the specialists of the department recommend the use of ophthalmic mallein for the diagnosis of glanders. This test, it is held, is more accurate, easier of application, and gives results more quickly than the other methods. At the same time, the use of this test does not interfere in doubtful cases with subsequent serum or subcutaneous mallein tests.

In considering the good results obtained and the advantages of this method of testing, a concentrated mallein has been prepared for this purpose by the Bureau of Animal Industry, and this was made available to a number of practicing veterinarians who desired to give this method of testing a thorough trial. It has also been employed by inspectors of the Bureau of Animal Industry in their field work, and reports are accessible regarding its action for diagnostic purposes on more than 18,000 cases. The results from all sources were uniformly satisfactory. Practicing veterinarians who have given this method a trial have reported very favorably on the results, and the tests conducted by the bureau inspectors on several thousand animals were also satisfactory. The method has been applied here in Washington whenever possible, and recently in some immunizing tests of glanders conducted by the Bureau of Animal Industry there was a good opportunity to repeatedly employ this test. In all these instances the results were uniformly good. In cases of glanders there appeared a marked purulent conjunctivitis, and the reaction at times was so severe that the animal could not open its tested eye.

The success of the test, the specialists find, depends upon the degree of concentration of the mallein. The bulletin gives full details as to the preparation of concentrated mallein, its application, and the effect of the ophthalmic test in healthy and glandered animals. The bulletin is technical and is designed primarily for veterinarians and State live-stock sanitary authorities.

HOW THE FARMER CAN USE THE FACILITIES OF THE U. S. DEPARTMENT OF AGRICULTURE.

(Continued from Vol. II, No. 21.)

The Office of Farm Management.

The principal object of the Office of Farm Management is to show the farmer how he can increase his farm income by good management. The office not only deals with general problems but endeavors to point out specific ways for any farmer with a specific problem to handle. The office has 66 trained investigators of agriculture distributed throughout the Northern and Western States whose first business is to gather the experience of successful local farmers. The results of their investigations are summarized and the conclusions made generally known.

The Office of Farm Management endeavors to enable the farmer to organize his work so as to dispense with unnecessary work animals and implements, and permit the farmer and his family to do a maximum share of the work so that a large part of their profits will not have to go for hired labor and to feed an overlarge number of work animals over an unproductive period.

The office is gathering data concerning the crops and types of live stock which are most profitable in all sections of the country and is attempting to formulate systems of farming based on the most profitable enter-

prises for farms of different size and for different soil, climatic, and economic conditions. It has shown that good farm organization greatly reduces the cost of production as compared with ordinary methods.

The office is giving special attention to the problem of farm equipment in the hope of being able to standardize this equipment to a certain extent, or at least to give out information that will enable the farmer to know what he needs and what it should cost; also how much he is justified in putting into equipment of different kinds.

The office is cooperating with a considerable number of farmers, usually including in the cooperation the State agricultural college, in keeping complete records of farm labor, income, and expenses. This enables the specialists to determine the cost of production as well as the cost of each type of operation carried on on the farm.

Some of the most interesting projects of the office are its "farm management surveys." These surveys cover a group usually of about 700 farms in one locality. The data collected from each farm includes the total investment and its distribution between land, buildings, live stock, machinery, etc., together with the total income and the enterprises from which it is derived, the total expenses and the character of these expenses. These data permit the calculation of the farmer's profits.

These surveys have given much information concerning the factors of efficiency in farming. They have shown that the size of the farm is a very important factor. In general, the larger the farm the better the net profits. They have shown that the number of days' productive labor which the farm provides is one of the best measures of the profitableness of the farm. Many other facts of interest have been brought out, too numerous to mention in this brief summary of the work.

Another investigation has shown just how the yield of crops depends not only on the fertility of the soil but upon the character of the seed used, the kind and number of operations performed, and the dates on which these operations occur. Marked differences in the method of managing the same crop are found in different localities, and the office attempts to acquaint each locality with the best methods of other communities.

The cost of producing the various farm crops and of all kinds of animal products is also studied by the survey method. The cost of producing potatoes has been studied in every important producing center in the country. The cost of producing apples is now under investigation, the work being nearly completed. Studies are in progress on the cost of producing cotton, beans, cabbage, corn, and other crops; also on the cost of growing beef cattle on the farm. A bulletin has been issued on the cost of rearing a dairy cow, the results being applicable to the region north of the Ohio River and east of the Mississippi River.

Much attention has been given to the subject of farm bookkeeping, and two bulletins on the subject have been issued. One of them deals with general principles, the other presents a definite system of bookkeeping now in use on many farms.

Methods of removing stumps from lands from which the timber has been cut have been studied in all the more important lumbering regions. Several publications on the subject have been issued. These deal with such subjects as the proper use of explosives, machinery for removing stumps and débris from the land, cost of labor and materials used in clearing land of stumps, etc.

COTTON STANDARDS PROMULGATED.

The official cotton standards of the United States were promulgated December 15 by the Secretary of Agriculture in accordance with the provisions of the cotton-futures act. The new standard replaces the old official grades heretofore issued by the department and must be used by the exchanges dealing in cotton futures after February 18. The standard covers the nine grades of cotton—middling fair, strict good middling, good middling, strict middling, middling, strict low middling, low middling, strict good ordinary, and good ordinary. Copies of the standard will be prepared as rapidly as possible for sale at cost.

In filling orders for copies of these standards the department must, of necessity, take into consideration the extent to which the applicant's business is affected by the operation of the United States cotton-futures act, and preference will necessarily be given to members of the future exchanges and to operators in the larger spot markets which may be bona fide spot markets for the purposes of the futures act. The law provides that the Secretary shall designate five or more such markets, whose prevailing prices shall determine the differences between the values of the several grades in the settlement of future contracts. The department therefore invites all parties who desire copies of these standards to communicate with the Chief of the Office of Markets.

THOROUGH FUMIGATION FOR BUFFALO MOTHS.

"The tacked-down carpet habit is a bad one from more than one point of view," says the department's Entomologist, and the Buffalo moth (or carpet beetle) is only one household pest that thrives under this securely fastened floor covering. In our Southern States this insect is of no importance as a household nuisance. One reason for this is probably that rugs or movable squares of carpet or matting are more generally used in this section.

The housekeeper of the North, eager to be rid of this pest, might well adopt the rug or square of carpet,

which may readily be rolled up and examined at all times and treated if found necessary. This really seems the most effective way of combating the Buffalo moth. If the floors are not suitable for polishing, straw mattings laid under the loose carpet squares will make an attractive appearance, and while not as cleanly as the bare floor, will afford fewer places for the insect than the tacked-down carpet.

Such housekeepers as prefer to keep their carpets fastened over the entire floor along with the attendant inconveniences must use more strenuous measures to be rid of the carpet beetle. Thorough fumigation with bisulphid of carbon or sulphur dioxid is the best measure. If bisulphid of carbon is used, great care must be taken that there is no fire in the house when fumigation is in progress, as the gas is very inflammable. The vapor should not be inhaled. The burning of sulphur (sulphur dioxid with some sulphur trioxid), which can be obtained at any drug store in the form of candles, has been effectively used for many years to destroy other insect pests, as the bedbug, and will also kill the Buffalo moth if the fumigation is thorough. Two pounds of stick sulphur have proved sufficient for every thousand cubic feet of space. The chief objection to sulphur fumigation arises from the strong bleaching action of the fumes in the presence of moisture and their powerful destructive action on vegetation.

Not only must measures be thorough, but they must be long continued for the housekeeper whose house has been chosen as an abode by the Buffalo moth. The "annual house cleaning" is not enough in this instance. If circumstances permit of but one it should be undertaken in midsummer, but two are really needed.

In making thorough house cleanings the rooms should be attended to one at a time. The carpets should be taken up, thoroughly beaten, and sprayed out of doors with benzine, and allowed to air for several hours. The rooms themselves should be thoroughly swept and dusted, the floors washed down with hot water, the cracks carefully cleaned out, and kerosene or benzine poured into the cracks and sprayed under the baseboards. The extreme inflammability of benzine, and even of its vapor, when confined, should be remembered and fire carefully guarded against.

Where the floors are poorly constructed and the cracks are wide, it will be a good idea to fill the cracks with plaster of Paris in a liquid state; this will afterwards set and lessen the number of harboring places for the insect. Before relaying the carpet, tarred roofing paper should be laid upon the floor, at least around the edges, but preferably over the entire surface, and when the carpet is relaid it will be well to tack it down rather lightly, so that it can be occasionally lifted at the edges and examined for the presence of the insect. Later in the season, if such an examination shows the insect to have made its appearance, a good though somewhat laborious remedy consists in laying a damp cloth smoothly over the suspected spot of the carpet and ironing it with a hot iron. The steam thus generated will pass through the carpet and kill the insects immediately beneath it.

The larva of the Buffalo moth is seen all the year around in well-heated houses, and is noticeable because of the stiff brown hairs which grow longer on its sides than on the back. The work of the insect is most destructive, the holes it makes being sometimes irregular, but more often it cuts into a carpet, following the line of a floor crack and making long slits.

A new Farmers' Bulletin (No. 626) entitled "The Carpet Beetle or Buffalo Moth" may be had free on application to the Editor and Chief, Division of Publications, Department of Agriculture, Washington, D. C., by the housewife who desires more information about this pest. It contains illustrations of the full-grown beetle and the larva which causes the damage.

ESTIMATING THE CROPS.

Work of the Bureau of Crop Estimates described in the annual report just published.

One hundred and forty-three thousand six hundred and twenty-one volunteer crop reporters and special correspondents are now assisting the Bureau of Crop Estimates in its work. The annual report of this bureau, formerly known as the Bureau of Statistics, which has recently been published, speaks highly of the services of these men, who receive no compensation for their work. Their cooperation has enabled the salaried force of the bureau to perform much more work than otherwise would have been possible.

In this connection the report contains some interesting statements in regard to the accuracy of the crop forecasts of the bureau, which were begun in 1911. A review of these shows that those made in June were, on an average, 10.5 per cent from the final estimates of the year; those in July, 9 per cent; those in August, 6.3 per cent; in September, 3.8 per cent; and in October, 3.3 per cent. It is pointed out, moreover, that the differences between the earlier estimates and the final ones do not necessarily indicate inaccuracy in the calculations, but are largely due to conditions which could not possibly be foreseen. For example, the condition of the corn crop on August 1 may indicate an average yield of 35 bushels per acre. Ten days later a devastating hot wind may work such havoc that the final yield may be only 2 or 3 bushels an acre. In fixing the earlier estimates, therefore, calculations are made on a basis which leaves an even chance for the final yield to be above or below the early forecasts.

The report also describes an important change in the organization of the bureau's field force. The place of State statistical agent, of whom there were formerly 47, or one for each State, has been abolished. Their work is to be taken over by an efficient corps of field agents, who will devote all of their time to the work of the bureau. The State statistical agents devoted only a small part of their time to the work of the bureau. Each one of these men will be assigned to a State or to a group of small States. In addition, specialists will be appointed for each one of the more important crops. For example, there is now a crop specialist on tobacco, a crop specialist on rice, and a crop specialist on cotton. These men will devote their entire time to their own particular crop, just as the field agents will do with the crop production within their own special territories.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1915

Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

VOL. II WASHINGTON, D. C., JANUARY 20, 1915 No. 24

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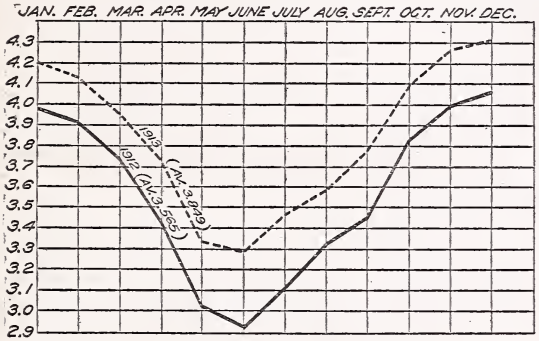
U. S. Department of Agriculture
Answered

FARMERS RECEIVING MORE FOR THEIR MILK.

The average price paid to farmers for milk in 1913 was 3.849 cents a quart, according to statistics recently compiled by the Dairy Division and the Bureau of Crop Estimates. This is appreciably higher than in 1912, when the average for the entire country was 3.565 cents per quart. As the above table shows, prices varied greatly, according to the season of the year, but at no time were they less than in 1912.



AVERAGE MONTHLY PRICES FOR THE ENTIRE UNITED STATES IN CENTS PER QUART AT FARMERS' SHIPPING STATIONS. THE DOTTED LINE INDICATES PRICES IN 1913, THE SOLID LINE IN 1912.

In order to obtain these averages, the investigators reduced all prices to a common unit, namely, the net price f. o. b. at the farmer's shipping station. It was impossible to ascertain the total quantity of milk supplied in the various sections, or at different seasons and for this reason the price per quart for each shipment was alone considered, the quantity being disregarded. The averages, therefore, are not absolutely exact, for larger quantities of milk are sold at some seasons than at others.

Commercially milk is still bought in a number of ways, 100 pounds being the unit sometimes, while other prices are quoted per pound of butterfat, per gallon, or per can of 8½, 32, or 40 quarts. Some dealers, moreover, offer premiums for milk richer than the ordinary, or for milk of a higher sanitary grade.

Milk, it will be noted, was highest in December, when the average price for the entire country was 4.3 cents a quart, and lowest in June, when it fell to 3.3 cents. The following table shows the average prices in the various geographical divisions of the country as defined in the census:

Average prices paid for milk in 1913.

[Figures are cents per quart net, at the farmers' shipping station.]

Section.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Average for year.
New England	4.763	4.734	4.673	4.333	4.068	4.008	4.339	4.375	4.562	4.962	5.016	5.019	4.571
West South-Central	4.562	4.562	4.562	4.062	4.062	4.062	4.062	4.062	4.062	4.562	4.562	4.562	4.312
Pacific	4.495	4.443	4.151	3.959	3.930	4.048	4.156	4.200	4.349	4.441	4.484	4.578	4.270
East South-Central	4.457	4.457	4.342	4.061	4.061	4.061	4.061	4.061	4.176	4.457	4.457	4.457	4.259
South Atlantic	4.532	4.415	4.356	4.212	3.428	3.420	3.426	3.457	3.705	4.361	4.512	4.543	4.031
Mountain	3.913	3.913	3.663	3.435	3.381	3.324	3.324	3.324	3.381	3.935	3.996	4.111	3.642
Middle Atlantic	4.051	4.028	3.767	3.468	3.065	2.912	3.149	3.335	3.574	3.910	4.134	4.187	3.634
West North-Central	3.883	3.767	3.648	3.434	2.978	2.987	3.097	3.262	3.505	3.684	3.904	3.942	3.508
East North Central	3.843	3.786	3.656	3.445	2.964	2.866	3.128	3.330	3.448	3.686	3.914	3.975	3.503
True average[1]	4.203	4.137	3.971	3.730	3.342	3.295	3.469	3.591	3.783	4.097	4.259	4.308	3.849

[1] True average of all sources (131) reporting.

From this table it appears that milk was at its highest in New England when the average price for December was 5.019 cents. The average for the year was also highest in New England, 4.571. It was lowest in the East North-Central States, the year's average being only 3.503 cents, and the June average falling to 2.866 cents. The greatest range in prices was found in the Middle Atlantic States, where the December price was 4.187 cents and the June price 2.912, a difference of more than a cent and a quarter.

These figures were compiled from figures furnished by milk dealers throughout the country.

THE FOOT-AND-MOUTH SITUATION.

A summary of the various foot-and-mouth quarantines issued by the department, as Bureau of Animal Industry Order No. 231, divides the quarantined area into three classes—closed, exposed, and modified.

In the CLOSED AREA live stock may be shipped in only for the purpose of immediate slaughter, can not be shipped out for any purpose, and the movement of dressed carcasses, hides, similar animal products, and hay, manure, fodder, etc., is subject to restriction. In the EXPOSED AREA there are no such restrictions on these substances, and live stock may be shipped

out for immediate slaughter at points where meat inspection is maintained, after previous inspection and certification, and shipped in for any purpose. In the MODIFIED AREA no previous inspection is required for the shipping out of live stock for immediate slaughter, and stock may be shipped in for any purpose.

Thirty days after the disinfection of all infected premises in closed areas stock may be shipped out for slaughter after previous inspection, and sixty days after the completion of the work of disinfection may come into the area, and even to the premises previously infected.

At the present time (January 9) the entire territory of eight States is covered by some one of these three forms of quarantine. These States are Connecticut, Delaware, Maryland, Massachusetts, New Jersey, New York, Pennsylvania, and Rhode Island. In Connecticut the counties of New Haven and Hartford are closed and the rest of the State modified area. In Delaware the county of New Castle is closed; the other counties modified. The whole of Massachusetts is a closed area.

In New Jersey territory within 5 miles of infected premises in 9 of the northern counties is closed area, and the remaining territory in these counties is exposed area. The rest of the State is modified area.

In New York 6 counties in and around New York City and 12 counties, in whole or in part, from Albany west to Erie are closed. The exposed area consists of the New York Central Stockyards at East Buffalo and of portions of the counties forming the closed area. The rest of the State is modified area.

In Pennsylvania 28 counties are still closed. These are mainly in the southeastern portion of the State, and in the neighborhood of Pittsburgh. The rest of the State constitutes a modified area.

The whole of Rhode Island is closed.

In Illinois 38 counties, situated in the extreme southern portion of the State, have been freed from all restrictions. Eight counties north of this free area are modified, together with a portion of the Union Stockyards in Chicago, which has been set aside for shipment of livestock from points outside of the quarantined area. The rest of the stockyards and the rest of the State is a closed area.

Twenty-nine counties in Indiana have been freed. These are situated along the southern and southeastern portion of the State. A portion of the Belt Railroad Stockyards of Indianapolis has been set aside, like a portion of the Union Stockyards in Chicago, for shipment of live stock for points outside of the quarantined area, and is modified area. Territory in 20 other counties, including several in the immediate vicinity of Indianapolis, within 5 miles of infected premises is a closed area and outside of this radius an exposed area. The rest of the State is modified area.

In Kentucky the extreme western portion of the State and the territory lying, roughly, to the east of Lexington is free. Twenty-seven counties between these two areas are quarantined in whole or in part. Only territory within 5 miles of infected premises in three counties, Hardin, Jessamine, and Woodford, is closed, however. Most of the other counties are in modified area.

In Maryland territory within 3 miles of infected farms in 11 counties is closed, and the remainder of these counties exposed area. With the exception of Frederick County, this territory is situated, for the most part, around Baltimore, with one or two counties on the Eastern Shore affected.

The entire Northern Peninsula of Michigan is free, and 24 counties in the southern portion of the State. These include the counties along the border of Indiana and Ohio where the disease first made its appearance.

In New Hampshire only the counties of Hillsboro and Rockingham are affected. In these, territory within 5 miles of infected premises is an exposed area and territory outside of this radius is a modified area.

Twenty-four counties in Ohio have been freed, a number of them in the southwestern portion of the State and one or two in the extreme northeastern portion. Cuyahoga County is free with the exception of the Union Stockyards, which is modified area. Territory close to infected premises in 30 counties is closed, and the rest of these counties exposed area. Twenty-nine counties are modified area.

Fifteen counties in eastern Iowa are quarantined, the counties of Cedar, Iowa, Jackson, and Jones being partly closed and partly exposed, and the remainder of the quarantined area being modified.

In Montana only portions of Dawson, Custer, and Fallon Counties are quarantined. In these, all territory within 5 miles of infected premises is closed, and the remainder of the quarantined area is exposed.

Loudoun County, in Virginia, is a modified area, the rest of the State being free.

Fourteen counties in Wisconsin are quarantined, the territory affected being the southeastern portion of the State in the neighborhood of Milwaukee. The stockyards located at Milwaukee and Cudahy are an exposed area. In most of the other counties territory within a 5-mile radius of any infected premises is closed and outside of this radius exposed area.

CROP REPORTS A BAR TO SPECULATION.

To prevent the circulation of false reports for speculative purposes is one of the great objects of the Government crop estimates, according to a circular just issued by the department for the information of its 150,000 volunteer crop reporters. Without such a system it would be practically impossible for anyone, except at great expense, to form an accurate estimate

of crop prospects. Farmers would suffer most from such conditions because they are neither so well organized as other lines of business nor in a position to take advantage of market fluctuations. Manufacturers and railroads, however, are also vitally interested in obtaining a disinterested forecast of conditions in all parts of the country in order that they may avoid waste in the distribution of articles and cars. "The earlier the information regarding the probable production of the great agricultural commodities can be published," says the circular, "the more safely and economically can the business of the country be managed from year to year."

The importance of these estimates is also indicated by the precautions taken to prevent the securing of advance information of their contents. The local conditions prevailing in any individual county can of course be ascertained by anyone willing to take the trouble; it is not, however, local conditions but the general average throughout the country which regulates prices, and this average can only be determined by those who have access to all, or at least a great part, of the reports from the 2,800 counties of agricultural importance in the United States. In consequence these reports are most jealously guarded. They come each month to Washington in specially prepared envelopes, and are delivered to the Secretary of Agriculture in sealed mail pouches which are opened only by the Secretary or Assistant Secretary. These two are also the only persons who know the combination of the safe in which the reports, still sealed, are deposited until the morning of the day on which the Government's monthly crop report is issued. They are then delivered to the Chief of the Bureau of Crop Estimates to be tabulated and the "condition figure" for each State determined. In the case of crops in which there is much speculation, such as cotton, corn, and wheat, this work is done by men who do not know to what States the figures with which they deal relate.

The results of this impersonal arithmetical process are turned over to the crop reporting board, composed of five or six members, who, with the exception of their chairman, the chief of the bureau, the assistant chief of bureau, and a statistical scientist, change each month. While the board is in session no one is allowed to enter or leave the room, or even the bureau, and all telephones are disconnected. When the report is in its final form copies are delivered simultaneously to all applicants for transmission by telegraph and telephone to all parts of the country. Additional copies are mailed later and finally the report is published in the Agricultural Outlook, of which an edition of 225,000 copies is distributed monthly.

The figures thus carefully guarded describe the acreage and the condition of each of the principal crops. The condition is expressed in percentages, 100 representing a normal condition, and are accompanied by a statement of the average condition at corresponding dates for a term of years. Much other valuable information is of course contained in the report, but it is the "condition figure" in which speculative interests center as the most reliable indication of future prices. At the same time this figure serves to minimize speculation and to protect farmers and other business men from misleading and unfounded rumors.

FIELD TEST FOR DIPPING BATHS.

A practical field test for lime-sulphur dipping baths for live stock has been devised by scientists in the department to lessen the difficulty experienced in maintaining these baths at the standard strength. The new test will be of use not only to the Federal and State authorities concerned with the supervision of official dippings, but also to private persons who wish to test the strength of their preparations.

The new method, it is pointed out, is intended for field use only and can never take the place of the more accurate laboratory analysis. Standard iodin solution is added to a measured quantity of the bath until all the calcium polysulphid in the latter has been decomposed. In this way the quantity of iodin required serves to measure the amount of calcium present as polysulphids, and thus, with sufficient accuracy for field use, the amount of sulphid sulphur. The complete decomposition of the calcium polysulphid is indicated by the failure of the bath liquid to color when a dilute alkaline solution of sodium nitroprussid is added.

No technical knowledge, however, is required to make the test. Each cubic centimeter of the test fluid employed in its operation represents one-tenth of 1 per cent sulphid sulphur in the bath. A description of the necessary apparatus and directions for operating are published in a new bulletin (No. 163) of the department, "A Field Test for Lime-Sulphur Dipping Baths." The bulletin also contains tables which will guide anyone in bringing the dips up to the strength required by official regulations. In dipping baths for sheep these call for 1.5 per cent of sulphid sulphur and for cattle 2 per cent.

SEE THAT SKIMMED MILK FED TO ANIMALS IS PASTEURIZED OR BOILED.

The fact that the foot-and-mouth disease may be communicated to cattle, sheep, other ruminants, and swine, through the milk of infected cows, makes it especially important at this time for cattle raisers to make certain that the skimmed milk they obtain from creameries has been pasteurized. Even if there is no foot-and-mouth disease in the farmer's neighborhood, it nevertheless is a great safeguard for him to see that the creamery skimmed milk which he feeds to his animals has been pasteurized, as tuberculosis can be communicated through raw skimmed milk.

So serious is the communication of tuberculosis through milk to swine that the meat packers discriminate against the hogs in certain dairying districts.

The department has long advocated this course, and the specialists hope that the danger of foot-and-mouth disease may lead those who have not been careful in this matter in the past to adopt this practice and continue it after the present epidemic has been stamped out.

Where a creamery does not pasteurize the milk, or where the farmer obtains skimmed milk from other farms for feeding to his hogs, he can make certain that he does not carry the foot-and-mouth germs or spread tuberculosis by bringing the skimmed milk to the boiling point before bringing it to the farm. Boiling does not interfere with its feeding value, although real pasteurization at 145° for 30 minutes is the better practice.

SOURCES OF THREE MAIN ELEMENTS OF COMMERCIAL FERTILIZERS IN THE UNITED STATES.

Present agricultural practice prescribes the use of three chemical elements as a "soil amendment," a "stimulant for plant growth," or a "plant food," as it is variously put. These three elements when applied to the soil in which a crop is growing have been found by practice to afford an increased crop yield. They are phosphorus, potassium, and nitrogen, spoken of by the respective trade terms of phosphoric acid, potash, and "ammoniates."

In the commercial fertilizers phosphoric acid is found in the form of calcium phosphate, which is bone phosphate or rock phosphate, usually treated with sulphuric acid to render it soluble. Potash is found as a salt or salts of potassium, either sulphate or chloride, and the "ammoniates," as the inorganic salt of ammonia, ammonium sulphate, the inorganic salts of nitric acid, sodium nitrate, and inorganic compounds of nitrogen, calcium cyanamid, or the organic compounds of nitrogen, contained in animal or vegetable refuse matter, cottonseed meal, abattoir tankage, or fish scrap.

The usual commercial fertilizers contain these three elements and have the designation of "complete fertilizers." These are sold under various brand names, the various brands frequently being recommended for particular crops. The proportion of the three essential ingredients is varied; as a usual thing that of the phosphoric acid is considerably higher than the other two, which are present in about the same proportion. Thus, for example, a "6–2–2 mixture" contains 6 per cent phosphoric acid (P_2O_5), 2 per cent ammonia (NH_3), and 2 per cent potash (K_2O). Its selling price in the retail market is based on its analysis. Little attention is paid to the source of these ingredients so long as the essential compounds are "available" or readily may be decomposed or made soluble for the use of the plants.

The Nation's supply of these three common ingredients of fertilizer may be summarized as follows: Of phosphoric acid there is an abundant supply in the large deposits of phosphate rock in Florida and Tennessee and the enormous deposits of Idaho, Montana, and Wyoming.

Of potash, now obtained exclusively from the German mines, there is little known in this country outside of the desiccated residues in Searles Lake, Cal., and the giant kelps of the Pacific littoral. In the latter there is much more than enough to supply the present demands of the fertilizer trade of the United States, the present annual consumption of potash being about 1,250,000 tons of varied composition. At present the kelps are not supplying any of this, since it has not been determined by actual experimentation on a commercial scale that they can be used economically as a source of potash. Estimates based on costs of similar operations indicate that they can be so used.

Of "ammoniates" there is a large source in the ammonia produced as a by-product in the distillation of coal for the production of gas or coke, or both. This source is but partially developed, as by the methods most commonly practiced in this country this possible by-product is not recovered. The amount of ammonia now going to waste is almost large enough to supply all of the "ammoniates" now demanded by the fertilizer trade. The abattoirs supply a large amount of tankage and dried blood of high fertilizer value, but of these possible by-products there is still an enormous loss through the lack of organization and cooperation in the small-scale slaughter of animals for food.

SERIOUS MISUSE OF GOVERNMENT FIGURES BY MAKERS OF HOG-CHOLERA REMEDY.

The attention of the Bureau of Animal Industry of the department has been called to the fact that the makers of a medicine sold as a hog-cholera remedy are misusing Government figures of the results obtained by Federal agents by the use of antihog-cholera serum, as evidence of the efficacy of their medicine. In several magazines there have appeared reading notices in which there are statements that this medicine has resulted in saving many hogs from hog cholera in Pettis County, Mo., Montgomery County, Ind., and Dallas County, Iowa. The figures given to indicate the results are exactly those reported to the department by its agents as showing the use and effect of antihog-cholera serum in sick herds.

For example, the Government figures on the use of serum, which are misused in this way by the medicine concern, are as follows:

Pettis County, Mo.:	
Hogs in infected herds treated	5,904
Hogs lost	1,038
Montgomery County, Ind.:	
Number of sick hogs in infected herds treated	4,562
Hogs lost	894
Dallas County, Iowa:	
Number of sick hogs in infected herds treated	5,686
Hogs lost	1,998

It is scarcely possible that any remedy could have been used on identically the same number of hogs and with exactly the same results as the antihog-cholera serum. On this point the inspector in charge in Pettis County, Mo., states:

> As far as we are able to ascertain none of this remedy has been used in Pettis County.

Farmers and others, therefore, are warned not to confuse this "remedy" with the antihog-cholera serum which is the one method of treatment used by the Federal Department of Agriculture.

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U. S. Department of Agriculture

Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

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PREPARE NOW FOR DEAR EGGS NEXT FALL.

If the farmer wishes to benefit by the high prices that eggs are certain to bring next fall and winter, he should begin to get ready for them at once, say the poultry specialists in the department. The way to have eggs late in the year is to hatch pullets early. It is the early hatches from which the early pullets are derived that are the largest money makers for the poultry producer. The early hatched cockerels can be marketed in almost any market in America when they attain a weight of three-fourths of a pound to a pound and a half each, which they should reach at about 6 to 10 weeks of age, respectively, at a greater profit to the producer than at any other time of their lives. The early hatched pullets, if properly grown, should begin to lay in the fall at the time when eggs are scarce and high in price.

A FEW FACTS TO REMEMBER.

Pullets must be well matured before they will lay many eggs.

Pullets that start to lay in the fall before cold weather sets in will, as a rule, lay all winter.

It is the early hatched pullets that produce eggs in the fall and early winter, when prices are high.

February, March, and April are the months to do your hatching in order to secure early hatched pullets.

Yearling and 2-year-old hens do not lay many eggs in the fall, as they are molting at that time, and the feed they consume goes not only to keep up the energy and life of the birds but also to put on or grow a new coat of feathers.

In properly matured pullets all surplus energy beyond that needed to meet the requirements of the body is available for the production of eggs.

Write the Secretary of Agriculture, Washington, D. C., for free bulletins on poultry management.

A COMMUNITY BUILDING.

One of the first community buildings in this country was opened by the Board of Trade at Washington, Washington County, Pa., on October 24. The purpose of the building is to furnish a general meeting place for town and country people and to bring them in closer touch. In the general meeting room on the first floor are telephone facilities, magazine and writing tables, sets of all available Farmers' Bulletins, the Experiment Station Bulletins of the State, and blanks upon which application may be made for those desired by individuals. Another large room on the first floor is suitable for luncheons, illustrated lectures, and local corn shows, apple shows, demonstration meetings, etc. On the second floor are two large rest rooms for women. Those in charge of the enterprise hope to be able to employ a woman attendant and provide her with facilities for caring for small children of visiting shoppers. The building also contains offices for the board and the agricultural bureau.

Back of the building is a hitching ground, with ample space for 50 teams, with a good brick walk to the building. Country people can hitch their teams, leave their wraps, arrange appointments by telephone, etc., and then go about their duties in town.

FARMERS AID IN FOOT-AND-MOUTH FIGHT.

The recent lifting of the foot-and-mouth quarantines from large areas previously closed and the modification of the quarantines in still other sections has been made possible, Federal authorities say, by the cooperation not only of the various State officials but of farmers and stockmen themselves. Where this cooperation has been most in evidence, progress in the eradication of the disease has been most rapid. The Federal authorities have of course control over the movement of live stock in interstate commerce only; the local quarantines are established and enforced by the State. Their efficiency depends in great measure upon the willingness of the people to submit to the necessary restrictions.

Indiana and Michigan are cited as instances of the importance in this respect of public opinion. In Michigan the first herd was slaughtered on October 19. Cases of the disease existed in 15 Michigan counties and in 18 in Indiana. In all, 330 herds were affected. Sixty days later these herds had all been slaughtered and the infected premises cleaned and freed from disease. In the interval there had been only a few scattering instances, half a dozen possibly, of the plague spreading from these different centers of infection to neighboring farms.

The people not only observed the quarantine regulations but they did all in their power to expedite the work of slaughter. In many cases they had the ditches in which the animals were to be buried dug and waiting for the killing gangs. As a rule no objection was taken to the appraiser's valuation of the condemned

stock, which is the more surprising in view of the fact that so little was generally known of the seriousness of the disease. The farmers did not want to part with their stock. They saw that the sore mouths and feet grew better and they had had no experience with the after effects of the pestilence—the constant aborting, the failure to produce milk, the ability to disseminate disease months after the visible symptoms had disappeared. Nevertheless they accepted the situation, helping instead of hindering.

In only a very few cases was there any attempt to conceal the existence of the disease; in fact, public opinion was so strongly against this that it was practically impossible to do so. In one instance a man fed some skim milk from a creamery to a calf which later developed foot-and-mouth disease. It occurred to him to kill the calf and say nothing about the matter. The neighbors, however, obtained some inkling of the facts and notified the authorities. After he had been forced to admit that he had killed the calf the body was dug up and unmistakable marks of the disease found upon it. Within two weeks all the rest of the herd was infected and had to be killed. In addition, the owner was fined $20 or so for breaking the quarantine regulations. The sentiment of the whole community, it should be noted, was against him.

In another case in Michigan an individual with a weakness for dogs, of which he owned five or six, ignored the regulation which required all dogs to be tied up in order to prevent their picking up and spreading the disease. With him, as with the calf owner, it was the neighbors who objected. The sheriff tied up the dogs and their owner paid a fine of $23. A week or 10 days afterwards he was punished more severely by the loss of all his cattle, which came down with the disease and had to be slaughtered. There had been no previous outbreak in that neighborhood for three weeks.

Although dogs, as in this case, and chickens unquestionably act as mechanical carriers in spreading the disease, in Indiana and Michigan the creameries were found to be one of the chief sources of contagion. One of the first steps taken by the authorities was to insist upon the creameries sterilizing the skimmed milk and whey before these were returned to be fed to stock. At the beginning of the campaign in Berrien County, Mich., there were at least 170 herds infected in an area approximately 18 miles long by 8 miles wide. Of this infection 70 per cent was traced to skimmed milk returned by the creameries. After the order requiring sterilization went into effect, one establishment allowed its apparatus to get out of order and three days went by before it was repaired. Infection in 33 herds was traced to the carelessness of these three days.

In Allegan County, again, there was one small herd affected, the owner of which was one of 59 patrons of a creamery. Though he delivered milk to it for only one or two days this was sufficient o infect 21 herds, and it was considered fortunate that all of the 59 patrons did not suffer.

From such experiences as these live-stock authorities are more than ever convinced that skim milk should invariably be sterilized. The danger from the foot-and-mouth disease is, of course, a passing one. Previous epidemics have been stamped out, and there is no reason to suppose that this one will not be. Tuberculosis, however, is a permanent menace. Its symptoms are not so immediately noticeable, and it is therefore more difficult to trace the origin of the infection, but there is no doubt that it is frequently disseminated in skim milk in the same way that the foot-and-mouth disease was in the instances described.

Together with the creameries, public sales of live stock have proved themselves most dangerous agents in spreading foot-and-mouth disease. In Indiana and Michigan the State authorities absolutely prohibited the holding of such sales in or adjacent to areas where the disease existed. The spread of the contagion in other States where this prohibition was not enforced shows the value of the precaution, but it requires strong and determined action on the part of the local authorities.

NEW BULLETINS FOR DISTRIBUTION.

Copies of the new publications listed here may be obtained free upon application to the Editor and Chief of the Division of Publications, United States Department of Agriculture, Washington, D. C., as long as the department's supply lasts.

When this department's supply is exhausted, publications can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., by purchase only, and at the prices noted.

Send all remittances to the Superintendent of Documents direct. His office is not a part of the Department of Agriculture.

Winter Wheat Varieties for the Eastern United States. 14 pages, 6 illustrations. (Farmers' Bulletin 616.)
Of interest in the wheat-growing sections of the eastern United States.

How to Attract Birds in Northeastern United States. 15 pages, 11 illustrations. (Farmers' Bulletin 621.)
Means of providing a food supply for wild birds about the homestead are especially described in this bulletin.

Basket Willow Culture. 34 pages, 24 illustrations. (Farmers' Bulletin 622.)
This bulletin is of interest to those engaged in or contemplating basket-willow culture, and is applicable to all portions of the country where willows are grown.

Cotton Wilt and Root-Knot. 21 pages, 15 illustrations. (Farmers' Bulletin 625.)
Contains description of Cotton Wilt and Root-Knot and methods of prevention.

The Carpet Beetle or "Buffalo Moth." 4 pages, 1 illustration. (Farmers' Bulletin 626.)
This bulletin is of interest to housewives in the Northern States.

The House Centipede. 4 pages, 2 illustrations. (Farmers' Bulletin 627.)
This bulletin is of interest to housewives throughout the United States. It is a reprint of Bureau of Entomology Circular 48.

Growing Peaches: Varieties and Classification. 13 pages. (Farmers' Bulletin 633.)

This bulletin is intended for general distribution.

The Larger Corn Stalk-Borer. 8 pages, 4 illustrations. (Farmers' Bulletin 634.)

Gives description and habits of, and methods of control of the larger corn stalk-borer. Of especial interest to farmers in the Southern States.

What the Farm Contributes Directly to the Farmers' Living. 21 pages, 1 illustration. (Farmers' Bulletin 635.)

This bulletin gives the results of studies to determine the indirect income furnished by the farm to the farmer's family; it is particularly applicable to the region east of the Rocky Mountains.

The Chalcis-fly in Alfalfa Seed. 10 pages, 10 illustrations. (Farmers' Bulletin 636.)

This bulletin furnishes a general knowledge of the chalcis-fly, an insect injurious to alfalfa seed, and contains several practical methods for its control.

Eradication of the Cattle Tick Necessary for Profitable Dairying. 4 pages, 2 illustrations. (Farmers' Bulletin 639.)

Experiments showing that cows carrying ticks did not hold up so well in milk flow as the cows kept free from ticks and did not increase their flow of milk when the feed was increased, as did the tick-free cows.

A Corn-Belt Farming System Which Saves Harvest Labor by Hogging Down Crops. 16 pages, 7 illustrations. (Farmers' Bulletin 614.)

This bulletin is of interest to farmers in the corn-belt States.

Breeds of Draft Horses. 16 pages, 10 illustrations. (Farmers' Bulletin 619.)

The respective characteristics and desirable qualities of the several breeds of draft horses in this country are presented in this bulletin.

Natural and Artificial Brooding of Chickens. 14 pages, 10 illustrations. (Farmers' Bulletin 624.)

Practical instructions in both natural and artificial brooding of chickens are contained in this bulletin.

Inland Boat Service: Freight Rates on Farm Products and Time of Transit on Inland Waterways in the United States. 36 pages. (Department Bulletin 74.) Price, 5 cents.

A discussion of the transportation of farm products by inland water carriers and statistics of operations in September and October, 1912, are contained in this bulletin.

Norway Pine in the Lake States. 42 pages, 6 illustrations. (Department Bulletin 139.) Price, 10 cents.

The manuscript describes the life history of the Norway pine, its requirement upon soil, moisture, and climate, its rate of growth and yield, and the best methods for its management.

The Dasheen, A Root Crop for the South. 10 pages, 3 illustrations. (B. P. I. No. 1110.)

This paper deals with experiments in the cultivation of the dasheen and in the cooking and preparation of the tubers for the table.

Single-Stalk Cotton Culture. 11 pages, 12 illustrations. (B. P. I. No. 1130.) Price, 5 cents.

This paper is of interest to cotton growers in all sections of the United States.

Quassiin as a Contact Insecticide. 8 pages, 1 illustration. (Department Bulletin 165.) Price, 5 cents.

The results of an investigation to determine the most suitable solution of quassiin for use as a spray for the control of the hop aphis are discussed in this bulletin.

The Manufacture of Acid Phosphate. 28 pages, 5 illustrations. (Department Bulletin 144.) Price, 10 cents.

Describes the manufacture of acid phosphate from phosphate rock, detailing the chemical and mechanical changes involved. Of interest to fertilizer manufacturers generally.

The Use of Radioactive Substances as Fertilizers. 14 pages. (Department Bulletin 149.) Price, 5 cents.

This bulletin discusses the fertilizer value of radioactive materials. It is suitable for distribution in any part of the United States.

Wood Pipe for Conveying Water for Irrigation. 40 pages, 11 illustrations. (Department Bulletin 155.) Price, 10 cents.

This bulletin will be of interest to irrigation engineers, owners of irrigation works, water-power companies, and water departments of municipalities.

Special Circulars for Southern Farmers.

By direction of the Secretary the following "Special Circulars" have been prepared in certain bureaus for distribution among farmers in the cotton belt who desire to diversify their farming operations:

By the Bureau of Animal Industry:
- Feeding Farm Cows in the South.
- Advantages of Dairying in the South.
- The Feeding and Care of Dairy Calves.
- Marketing Butter and Cream in the South.
- How Southern Farmers May Get a Start in Pig Raising.
- Horse and Mule Raising in the South.
- Producing Sheep on Southern Farms.
- Suggestions on Poultry Raising for the Southern Farmer.
- Making Farm Butter in the South.
- Shall Southern Farmers Build Creameries?
- Do You Keep a Cow?

By the Bureau of Animal Industry—Continued.
- The Production and Care of Milk and Cream.
- Conveniences for Handling the Farm Cow and Her Products.

By the Bureau of Plant Industry:
- Permanent Pastures for the Cotton Belt.
- Sorghum for Forage in the Cotton Belt.
- Rye in the Cotton Belt.
- Winter Wheat in the Cotton Belt.
- Winter Oats in the Cotton Belt.
- Rape as a Forage Crop in the Cotton Belt.
- Hairy Vetch for the Cotton Belt.

ALFALFA-SEED PEST RESEMBLES GNAT, BUT IS MUCH MORE DANGEROUS.

The alfalfa-seed destroyer, known as the chalcis fly, does its destructive work in clover or alfalfa seeds, from the Gulf coast to the northern limits of the United States, according to the department's specialist who has personally seen the widespread devastations of this pest. By harvesting severely infested crops, by cleaning fence lines and ditch banks, and by winter cultivation the grower of alfalfa seed may help to control this insect. A new Farmers' Bulletin (No. 636), entitled "The Chalcis Fly in Alfalfa Seed," gives the details of these methods of control, and may be had free of charge on application to the department.

The chalcis fly under the microscope is a formidable looking insect but when seen in the field it is frequently confused with the gnat. These pests may be seen in great numbers flying over alfalfa-seed shocks and swarming over the sickle bar when the alfalfa is being cut. The eggs are so small as to be invisible to the naked eye and are deposited through the soft, green seed pods directly into the soft seeds when the pods are about half grown. Immediately upon becoming a fly, the insect eats its way out through the shells of the infested seeds, then through the green pods. Large portions of the seeds are hollowed out in this manner when they are still green and growing.

The infested seeds which still contain the living larvæ of the insect may be recognized by their abnormal shape and usually by the dull brown color. Some of the infested seeds, however, retain their natural color, but they always lack the glossy appearance of normal seeds. The extent to which alfalfa seed is damaged by the fly is not generally apparent, owing to the minuteness of the insect and because its destructive work is accomplished within the growing seeds. The alfalfa-seed grower can only estimate the percentage of his crop destroyed by opening a large number of the seed pods and observing the infested seeds.

HARVESTING SEVERELY INFESTED CROPS.

An alfalfa field is frequently found with such a severe infestation by chalcis flies that the grower considers it of insufficient value to be harvested and simply drives in a herd of cows to pasture the crop. With regard to the control of the chalcis fly for the protection of future seed production, this is a costly mistake. Observations show that many of the pods burst open, while others are trampled to the ground. Here great numbers of infested seeds offer favorable conditions for the hibernation of the chalcis-fly larvæ. These, as mature flies, will infest the seed crops the following spring. Under such circumstances the crop should be mowed, removed from the field, and stacked. It may then be used as rough fodder, and if the remaining straw is burned in early spring the hibernating larvæ will be destroyed.

CLEANING FENCE LINES AND DITCH BANKS.

The following facts emphasize the importance of cutting the alfalfa along ditch banks and fence lines, as well as in the fields:

1. The earliest seed pods are found to develop on the isolated and vigorous growing plants found in such places.
2. The earliest pods have an especially large percentage of the seeds infested with chalcis-fly larvæ.
3. The chalcis-fly larvæ are able to pass completely through the first generation in the earliest pods before the regular seed fields are sufficiently advanced for oviposition.

This cutting should be done with the harvesting of each hay crop, before the seed crop is grown.

It is sometimes necessary to have two or more irrigation ditches running parallel, making it impracticable to cut the alfalfa between them. In such cases it is economy to fence the ditches and use this land as a small summer pasture, thus preventing the development of alfalfa seed pods and the chalcis flies.

WINTER CULTIVATION.

In the process of harvesting the seed crop many pods containing infested seeds fall to the ground. Here they remain until the following spring, when the hibernating insects emerge. A thorough cultivation with an afalfa cultivator at some time late in the fall or in early winter will sufficiently cover such pods and will prevent the emergence of most of the adults when the warm spring weather arrives.

DESTROYING THE SCREENINGS.

After the alfalfa is thrashed the great mass of screenings which is left frequently contains large numbers of seeds infested with hibernating larvæ. If the chaff, together with the screenings, is placed in a compost pile for three or four months, so that it will become heated and decay, most of the insect life will be destroyed. Unless it is possible to treat the screenings in this manner, they should be burned before the growing season opens in the spring.

BURNING FENCE LINES AND CHECK RIDGES.

Many of the alfalfa seed pods along check ridges and fence lines may be destroyed by burning off the weeds and alfalfa. This should be done either in the fall or early spring.

PLANTING CLEAN SEEDS.

In purchasing alfalfa seed farmers should insist upon having seed which has been well cleaned after thrashing and should never plant the uncleaned product in new fields. In many localities much of the seed is sold both by farmers and by local dealers without first having been cleaned. The product of such seed when harvested from the late crops frequently contains a 10 to 15 per cent infestation of hibernating chalcis-fly larvæ. The planting of this uncleaned seed frequently gives the chalcis fly a start in the new field, as well as resulting in a poor stand.

CUTTING THE SEED CROP.

It is not an uncommon practice for the farmer to allow the seed crop to remain on the fields an excessive period in order that more of the green pods may develop. In such fields on the same plant are found ripe pods bursting open, as well as fully developed, half-grown, and newly forming pods.

Observations show that many of the chalcis flies infesting the earlier or first pods have had sufficient time to complete their life development, emerge from the seeds, and deposit their eggs into the green pods growing on the same plant upon which they themselves were fostered.

In view of this, the seed crop should be so handled that the setting of pods will be as uniform as possible, and the crop should then be harvested as soon as the larger number of the pods are ripe.

STACKING THE SEED CROP.

It has been demonstrated that great numbers of chalcis flies emerge from the seed pods at about the time the pods ripen and continue to emerge indefinitely. In midsummer most of them, however, emerge within three or four weeks after the crop is harvested. Where later seed crops are grown, it is therefore advisable to stack the early crops as soon as possible, thus preventing the free emergence offered by leaving the crop in shocks on the field.

DESTROYING BUR CLOVER.

In some localities bur clover grows abundantly and matures its seed pods in early spring. The chalcis flies thus have already completed the development of an entire generation in the seeds of these plants before the alfalfa-seed pods have developed in the fields. Under such conditions it would be well to destroy the bur-clover pods by burning the fence lines in the spring. This can frequently be done after the plants mature and before the alfalfa-seed crop comes on.

CLEANING THE SEEDS.

Some of the alfalfa-seed-growing districts have organizations among the seed growers with officers having complete charge of cleaning and marketing the seeds for the growers. The product handled through these organizations is, for the most part, well cleaned, so that nearly all of the infested seeds are removed before marketing. When done on a large scale the cost of cleaning the seed is about 40 cents per 100 pounds. In addition to removing the infested alfalfa seeds this process removes the weed seeds, and the product will then command the highest market prices. Where it is necessary to do the cleaning on the farm, good results may be secured by using the proper sieves in a small fanning mill.

NECESSITY OF ORGANIZED EFFORTS.

The habits of this insect, together with the general practices of alfalfa-seed growers, make it necessary for the growers of each district to cooperate in an effort to control this destructive seed pest. While it is important that each farmer do all in his power to reduce the abundance of this insect on his own farm, the efforts of an individual are greatly hampered by the negligent habits of a neighbor. The rapid distribution from breeding centers of the chalcis flies and the short minimum period required for the development of the adults render organized action necessary.

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Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

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U. S. Department of Agriculture

MORE LIVE STOCK NOW THAN A YEAR AGO.

GOVERNMENT STATISTICS CONTRADICT REPORTS THAT PRICES WILL REACH UNPRECEDENTED FIGURES.

For the first time in many years, information collected by the department shows that all classes of live stock in the United States are increasing in numbers. Thus the real facts contradict, absolutely, sensational reports that prices for meat and shoes would rise to unprecedented figures in the immediate future. It has even been said that a Government statistician predicted meat at 50 cents a pound and shoes at $10 a pair within the next two years. Such a prediction, the real Government statisticians say, is quite unwarranted.

On January 1, for example, the number of beef cattle showed an increase of 3.4 per cent over the number a year ago, and an actual increase of 1,212,000 head. Hitherto the number of beef cattle in the United States has declined steadily since 1910. There are also more milch cows in the country than last year, the increase being 2.5 per cent, or in numbers 525,000. Swine, however, showed the greatest increase of all classes—9.6 per cent. On January 1, 1914, there were only 58,933,000 swine in the country; on January 1, 1915, 64,618,000. This is accounted for by the fact that the production of swine can be increased more rapidly than that of other classes of live stock and consequently an enlarged demand can be met more readily.

The prediction of 50-cent meat and $10 shoes was accompanied by the declaration that France alone has taken from America nearly 300,000 horses within the last five months and that the other countries at war have drawn upon our resources in the same proportion. The facts are that more horses were on the farms of the United States on January 1, 1915, than there were a year before; the increase being 233,000 head, or 1.1 per cent. So far from France alone having taken 300,000 horses from us, the total exports since the war began have certainly been much less than 100,000 and very likely not over 75,000. Since there are approximately 25,000,000 horses altogether in the United States, the drain on account of the war is scarcely alarming.

It is, in fact, pointed out by Government statisticians that the market value of farm horses has actually declined to such an extent that the average is now about $6 a head less than a year ago. This decline is most noticeable in the cotton States and in those States which make a business of breeding horses for sale in other sections. Mules have declined even more than horses, their value being now $11.50 per head less than a year ago. The explanation is to be found in the depression on account of the cotton situation in the South, which is the great market for mules. An improvement in this respect will do much to restore the demand for horses, so that Government specialists, while ridiculing the notion of a horse famine, are convinced that farmers will find it profitable to use good work mares for breeding more stock.

As for hides, the situation is not quite so clear, but even here there has been much gross exaggeration. From two-fifths to less than one-half of the leather used in this country is imported, about 25 per cent of the foreign hides coming from Argentina, 15 per cent from Canada, 11 per cent from Mexico, 8½ per cent from European Russia, and 7½ per cent from France. Since the outbreak of the war importations have shown a certain falling off, those for September, 1914, for example, being only 34,000,000 pounds, instead of 45,000,000 pounds the year previous. There is, however, little reason to suppose that this decrease will be permanent or of sufficient importance to create any real scarcity. Since the great bulk of the imported hides comes from countries that are not at war, shipments are not interfered with in any way, and the only new factor to be considered is the possibility of an increased demand by the warring countries.

It is believed, however, that the United States is now in a better condition to face such a situation than for years past. The tide, it seems, has turned. Instead of live stock steadily decreasing year after year, this year for the first time, as has been said, all classes show an appreciable increase. Including horses, mules, milch cows, beef cattle, sheep, and swine, there were on January 1, 1915, 7,712,000 more farm animals in the United States than on January 1, 1914. The increase in the total value was $78,024,000, or 1.3 per cent. It is quite true that this increase is not yet proportional to the increase in population, which is approximately 2 per cent; but the fact that there is an increase, that the tide seems definitely to have turned, is regarded as a sufficient answer to alarming exaggerations and misleading figures.

COTTONSEED RATIONS THAT SUPPLY CHEAP AND VALUABLE PROTEIN AND FAT.

Twenty per cent of our cottonseed meal was consumed last season by Germany, Denmark, Switzer-

land, and other European countries. The present war, however, has abolished the German consumption of this product. This fact, together with the large cotton crop produced this year, has thrown an excess of cottonseed products on the home market, reducing the average price of cottonseed meal and hulls 20 to 25 per cent. The meal shipped to Europe last year would feed 400,000 head of mature cattle for 12 months.

Even under ordinary circumstances, with the price of cottonseed products at their high-water mark, according to the specialists in animal feeding of the department, the meal is the cheapest nitrogenous feed available. Pound for pound, cottonseed meal contains three times the per cent of protein contained in wheat (grain), wheat bran, wheat middlings, vetch hay, alfalfa hay, soja-bean hay, or crimson-clover hay, and four times the quantity of fat found in any of these foodstuffs. About 88 per cent of the protein in high-grade cottonseed meal is digested by the animal, or, in other words, the digestive coefficient of the protein in the meal is 88 per cent. The digestive coefficient of corn meal is only 68 per cent, and it does not contain one-fourth the actual amount of digestible protein found in cottonseed meal.

Comparing the cost of digestible protein in a pound of cottonseed meal with that in other feeds, and assuming the average delivered cost of cottonseed meal to be $24 per ton, the figures show that the feeder gets two to five times as much protein for his money from cottonseed meal as from other feeds. The following table shows the relative cost of protein in cottonseed meal and other forms of feed:

	Cost per ton.	Per cent digestible protein.	Cost in cents per pound of protein.
Cottonseed meal	$24.00	34.00	3.52
Ground oats	32.00	9.50	17.00
Corn meal	32.00	8.00	20.00
Wheat bran	26.00	12.50	10.00
Dried brewers' grain	26.00	15.50	8.40
Buckwheat middlings	26.00	22.00	6.00
Gluten feed	30.00	23.00	6.50
Linseed meal	40.00	32.00	6.30

In addition, an average of about 85 per cent of the fertilizing value of the nitrogen remains in the manure.

In the past we have imported a large per cent of our nitrates for commercial fertilizer, and these importations will be cut down on account of the war. The value of cottonseed meal will therefore be still more obvious in the spring, when the demand for fertilizers begins.

A few specimen rations containing cottonseed products are given as an illustration of the use that may be made of these feeds. The actual amounts will vary, of course, as the appetite of the animal and judgment of the feeder may determine, and as other feeds are combined in the ration. The proportions stated are correct for ordinary conditions, and with reasonable care in feeding rations of this kind will be found both satisfactory and economical.

Amount of feed per 1,000 pounds of live weight.

FOR FATTENING CATTLE.

Ration No. 1:
- 10 pounds corn.
- 4 pounds cottonseed meal.
- 10 pounds cottonseed hulls.
- 20 pounds silage.

Ration No. 2:
- 6 pounds cottonseed meal.
- 27 pounds cottonseed hulls.

FOR GROWING BEEF CATTLE.

Ration No. 1:
- 6 pounds corn.
- 3 pounds cottonseed meal.
- 4 pounds wheat bran.
- 10 pounds cottonseed hulls or sorghum hay.
- 25 pounds silage.

Ration No. 2:
- 6 pounds corn.
- 3½ pounds cottonseed meal.
- 10 pounds clover or alfalfa hay.
- 30 pounds silage.

FOR MILCH COWS.

Ration No. 1:
- 35 pounds silage—corn, milo maize, kafir corn or sugar cane.
- 10 pounds cured roughage—corn without ears or hay from grasses exclusive of legumes.
- 4 pounds wheat bran.
- 4 pounds cottonseed meal.

Ration No. 2:
- 35 pounds silage.
- 10 pounds leguminous hay—clover, alfalfa, cow peas or soja beans.
- 6 pounds wheat bran.
- 2 pounds cottonseed meal.

FOR WORK HORSES AND MULES.

Ration No. 1:
- 9 pounds corn.
- 2 pounds cottonseed meal.
- 12 pounds prairie hay.

Ration No. 2:
- 8 pounds rice bran.
- 4 pounds molasses.
- 2 pounds cottonseed meal.
- 12 pounds prairie hay.

FOR GROWING HORSES AND MULES.

Ration No. 1:
- 6 pounds corn.
- 2 pounds cottonseed meal.
- 12 pounds prairie hay.

Ration No. 2:
- 3 pounds corn.
- 3 pounds wheat bran.
- 2 pounds cottonseed meal.
- 14 pounds sorghum hay.

Amount of feed per 100 pounds of live weight.

FOR FATTENING SHEEP.

Ration No. 1:
- 2 pounds corn.
- ½ pound cottonseed meal.
- 1½ pounds prairie hay.

Ration No. 2:
- 1 pound black strap molasses.
- ½ pound cottonseed meal.
- 3 pounds cottonseed hulls.

FOR GROWING SHEEP.

Suggested ration:

- ½ pound corn.
- ⅓ pound cottonseed meal.
- ⅓ pound wheat bran.
- 2 pounds prairie hay.
- 2 pounds silage or roots.

Growing sheep to be kept in condition should have about 2 pounds of silage or roots, or similar food, in their ration.

If cottonseed hulls and meal can not be bought in the local markets any cottonseed oil mill or broker will supply these products. The meal is generally marketed in sacks of 100 pounds. The usual carload consists of 300 to 400 of these sacks. The hulls can be bought in 100-pound bales or sacks, or can be bought cheaper loose in bulk. A carload varies from 12 to 20 tons. If desired, these products may be shipped in the same car by putting the sacked meal on top of the loose hulls.

THE FOOT-AND-MOUTH DISEASE IN EUROPE.

Because of the prevalence of foot-and-mouth disease in Europe and South America, importations of live stock are now limited practically to shipments from Great Britain, Ireland, and the Channel Isles. Even with these countries trade has been interrupted several times in recent years, for the Government does not permit the importation of animals from countries where the disease exists, and there have been several outbreaks in Great Britain lately.

Up to November, 1906, American ports were open to Belgium and Holland. In that month, however, some sheep were taken into Belgium from France where the disease was quite prevalent and brought the pestilence with them. By the end of the year every Province in Belgium was affected, and Holland as well. Since that time both of these countries have been fighting the disease, but have not yet succeeded in eradicating it.

In Italy, France, Switzerland, Germany, and Russia the plague has existed so long and has gained such a foothold that it is economically impossible to fight it with the American methods of slaughter and disinfection, for to do so would be to kill a large percentage of the live stock in these countries. In consequence, the authorities appear to be making little or no progress in their campaign. The outbreak, for example, which appeared in Germany in 1888 increased steadily until 1892 when it diminished gradually for a few years but again reached great proportions in 1899. Thereafter it continued to exist to a greater or less extent until in 1911 it attained a virulence unequaled before. In that year 3,366,369 cattle, 1,602,927 sheep, 2,555,371 hogs, and 53,674 goats were affected. At that time the total number of cattle, sheep, swine, and goats in Germany was only 51,319,000, while there were in the United States 172,572,000, or between three and four times as many. It can readily be imagined, therefore, what it would mean to the United States if the disease was to gain the foothold here that it had in Germany, where, as these figures show, approximately one out of seven of the animals susceptible to the disease was affected.

Since the mortality in the disease is comparatively low, ranging from only 3 per cent in mild forms to 30 or 40 per cent in malignant cases, the havoc caused by the pestilence is sometimes underestimated. From the work of various scientists, however, who have endeavored to ascertain the decrease in value of an animal which recovers from an attack, it may be said that on an average this amounts in Germany to $7 and in Holland to $10. In this country, with its higher prices, the loss is correspondingly greater. If these figures be accepted, it is obvious that the amount of money spent in eradicating the disease becomes insignificant in comparison with the loss it causes when left to itself.

The German Government, of course, has not left the disease to itself. The more recent outbreaks it attempted to control by the American method of slaughter, but the pestilence had gained too much headway and was too firmly established in too many portions of the country for this method to succeed, and the slaughter of the infected herds had to be abandoned. It now appears that there is no hope of getting rid of it until the virus has worn itself out. At present it seems that as soon as the animal's period of acquired immunity is over and favorable conditions present themselves, the contagion breaks out with renewed virulence, so that the authorities have practically abandoned all hope of controlling it by means of quarantines. One scientist, indeed, has asserted that unless all the infected farms were absolutely isolated and the movement not only of live stock but of persons absolutely prohibited, the disease could not be stamped out. Such a quarantine is, of course, utterly impossible to enforce. In certain portions of Germany, in fact, the farmers, realizing that the disease is inevitable, make haste to be done with it by exposing their stock deliberately to mild cases in the hope that this will result in an immediate mild attack and immunity for several years thereafter.

Great Britain and Norway and Sweden, on account of their comparatively isolated positions, have been more successful in keeping out the disease. The outbreaks in these countries have been more sporadic and by resorting to immediate slaughter the authorities have been able to stamp them out. In the outbreak near Dublin in 1912, indeed, measures were adopted which were more stringent than any used in this country. As soon as the existence of the disease became definitely known, so-called "stand-still" restrictions were imposed on the affected district. Not only was the movement of live stock into or out of the district

absolutely forbidden, but no cattle, sheep, goats, or swine could move along or even across any highway or thoroughfare.

Moreover, within each of the affected districts, known as "scheduled districts" were two smaller areas in which there were even closer restrictions. One of these areas consisted of the premises on which the actual outbreak had taken place. These premises were declared to be an "infected place." From such a place nothing could be taken of any sort without permission, and no permission was granted until the objects in question had been thoroughly disinfected. No one but the person actually attending the stock was allowed to enter any shed or field in which a diseased or suspected animal had been kept, and the one man who could do so was compelled upon leaving to wash his hands thoroughly with soap and water and disinfect his boots and clothes. He was, moreover, prohibited from caring for any animal which was not diseased or suspected. On farms adjacent to the "infected place" the owners of live stock were ordered to stop all movements of their animals, and these orders together with the other regulations, were enforced through the local constabulary who closely guarded all infected places. This patrol was so strict that it was practically impossible for anyone to pass into or out from the forbidden area without instant detection,

Within the "scheduled districts" a house-to-house and farm-to-farm inspection was carried on by veterinary inspectors who not only examined live stock but made a record of the number on each farm in order to detect any cases of surreptitious shipments. Exposed stock was slaughtered, as has been done in all sections of this country where satisfactory progress has as yet been made in stamping out the pestilence.

In addition to slaughtering the stock, farmyards and similar places were thoroughly disinfected; the fields in which the animals had grazed were carefully strewn, by machines, with newly burned lime; stacks of hay were disinfected by superheated steam, the foxes in the neighborhood were destroyed as far as possible by poison, and all persons in the neighborhood were compelled to tie up their dogs. The wheels of all vehicles and the feet of horses which left the "infected places" were previously washed with disinfectant fluid, and cans of this fluid were placed about in fields so that there would be no excuse for anyone failing to observe the required precautions.

These methods were successful in stamping out the disease, although there have been one or two minor outbreaks in Ireland since that time. In this connection it is interesting to note that the authorities in charge of the campaign were unable to discover any clue to the origin of the pest. "Foot-and-mouth disease," they reported, "is of such an infectious character and may apparently be carried through so many diverse and elusive ways that in this as in other cases it is most difficult to fix on any specific medium of diffusing the infection. The disease was probably carried, for the most part, by persons who had been in contact with infected animals, but the connection between the various cases could not be definitely traced except in one or two instances."

TO CROP REPORTERS.

No regular crop report will be made by crop reporters as of February 1, with the exception that county reporters will report upon prices of agricultural products. February is the only month of the year when no general crop inquiry is made by the Bureau of Crop Estimates.

SILK-WORM EGGS NOT SUPPLIED BY DEPARTMENT.

For some years the Bureau of Entomology of this department has been overwhelmed every spring with requests for silk-worm eggs received from people in different sections of the country, who have been misled by unauthorized statements to the effect that silk-worm eggs could be obtained from this bureau upon application. The silk-worm investigations of the department were discontinued a number of years ago.

NATURAL CAUSES PREVENT OUTBREAK OF GREEN BUG.

Two natural causes this year have apparently prevented a general outbreak of that dangerous pest, the green bug. Present weather conditions are most favorable for such an outbreak and the pest appeared some time ago in volunteer oats in South Carolina. However, one of the department's investigators has been going over the grain fields in Texas where the pest usually first makes its appearance whenever there is a widespread invasion. As a result, the entomologists see no possibility of an outbreak in the Southwest the coming spring. This is true, although the green bug seems omnipresent (in very limited numbers) throughout the fields which the investigator examined.

The two natural checks which seem to have prevented an outbreak this season are the following:

(1) A certain parasite developing on another pest, namely, the oat aphis, occurred in such numbers as to overwhelm the green bug as well as the oat aphis. This is an unusual occurrence which previously has never been noticed by the department's investigators.

(2) Last fall's dry weather in the Southwest hindered the growth of voluntary grain in the fields so that almost none of it came up. The green bug, therefore, had little opportunity to develop until sown grain gave him a chance.

In (1) we see a strange instance of a pest being a benefactor, in that the oat aphis caused enough parasites to develop to destroy not only itself but another dangerous insect. This is no reason, however, for the farmer to wish for the increase of the oat aphis, for although that insect does not do nearly the damage which the green bug does, unforeseen depredations might result if its numbers were greatly multiplied.

In (2) we see the influence of dry weather in preventing growth of volunteer grain at a time when the green bugs' numbers had been enormously reduced by (1).

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Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

VOL. II WASHINGTON, D. C., FEBRUARY 10, 1915 No. 27

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U. S. Department of Agriculture
Answered

LARGER CORN STALK-BORER RESPONSIBLE FOR MUCH WIND DAMAGE.

IT IS ALSO AN ENEMY OF SUGAR CANE.

In many Southern cornfields, a heavy wind late in the season before corn is matured does great damage by breaking the plants off at the surface of the ground. Examination of the broken stems will, in most cases, show that they have been greatly weakened by the burrows of a larva or caterpillar known as "the larger corn stalk-borer." In addition this caterpillar does its damage largely within the stem of the plant and is so concealed that in most cases its presence passes unnoticed.

These caterpillars also work in the early part of the season in the throat of the young corn and damage the tender growing tip in a way that prevents the plant from becoming a normal productive specimen. This damage is commonly known in many parts of the South as "bud-worm" injury, and though there are several other insects which cause similar mutilation of the leaf, the "larger corn stalk-borer" is the worst offender. The effect of its work on the leaves of the young corn plants is similar to that resulting from attacks by the corn billbugs and shows in the familiar rows of small holes across the blades of the plant.

The larva which does the damage, when fully grown is a robust, dirty-white caterpillar 1 inch in length, thickly covered with round or irregular dark spots each of which bears a short, dark bristle. When the caterpillar is small, these markings are almost continuous, giving the whole insect a dark color and hairy appearance.

In the second generation, this overwintering caterpillar gradually loses its darker markings and after the last molt remains unspotted and light yellow in color, except for the head and the thoracic plate, which retain the brownish-yellow of the earlier stages. These larvæ are plump and active in the fall, but flabby and sluggish after fasting throughout the winter. The larvæ pass the winter in the extreme lower tip of the corn roots. Two generations a year appear to be the rule, although it is possible that in the far South, on sugar cane, a partial third generation may occur.

The insect seems originally to have been an enemy of sugar cane, and later transferred its attention to corn. The borer also has been reported as feeding on sorghum, Johnson grass, guinea corn, and grama grass. The injury to these four plants is never severe, but they must be considered and examination made of them to determine whether they harbor the pest when methods of control are planned.

PREVENTION MEASURES.

Rotation is one of the best general preventives of injury from insects affecting field crops. Experience has shown that where corn has followed itself upon the same field for two or more years there has been a much greater loss from the borer than where an annual change of crop has been practiced. This is especially noticeable where stalks or stubble from the previous year have been allowed to remain undisturbed throughout the winter. The moths, upon emergence in the spring, finding themselves surrounded by the young corn, commence egg laying at once, and escape the dangers encountered in searching for another field of corn. A forced journey in search of young corn results in many of the females being eaten by birds or being destroyed because of rain, cold, or failure to find the object of their quest. A few moths will always succeed in their search, but the successful proportion will be greatly decreased by persistent crop rotation.

Another remedy, probably the best for this insect is the thorough destruction, some time before the period of emergence of the moths in the spring, of all the stalks and stubble remaining in the field from the preceding crop. If all this trash can be disposed of before the opening of spring, the numbers of the pest must be greatly diminished if not almost exterminated, for the only form in which the insect passes the winter is that of the caterpillar, and the only known location is in the lower tip of the corn root, snugly hidden. Some few may, however, be found to survive in the roots of the larger grasses mentioned above, and care should be taken in such cases to treat these in the same way. The method employed in disposing of the stubble and stalks will depend largely on the conditions in individual cases. If the stubble is cut low and the land is moderately heavy, a thorough deep plowing may suffice, an inch or two of well-settled soil being sufficient to prevent the escape of the adult moths. Bringing the stubble to the surface where it can dry will kill some of the contained larvæ, but this method depends too much on the state of the weather to be trusted. By far the most effective plan is to remove the stubble from the field with a rake and burn it.

The larva of a brown velvety beetle sometimes enters the holes in the stalks of stubble after the corn

is cut and devours the caterpillars found therein. This larva has been found to be of great value in reducing the numbers of the borers in fields of sugar cane.

Any method which will insure the complete destruction of the over-wintering larvæ, if persisted in and carried out simultaneously over large sections of the country, will effectually preclude serious damage from the insect.

THE SOUTH DOUBLES FALL OATS ACREAGE.

A significant indication of the spread of southern interest in diversified farming is contained in the estimate of the Bureau of Crop Estimates that more than double the quantity of oats—102 per cent, to be exact—was sown in the cotton States last fall than in the fall of 1913. The fall sowings in 1913 amounted to approximately 1,872,000 acres, in 1914 to 3,775,000, an increase of 1,903,000 acres. If the same acreage is sown to spring oats this year as last, the 1915 oat crop in the cotton States will be more than 6,257,000 acres. Recent reports, moreover, indicate an intention to increase the spring sowings as well.

The increase in the fall sowings of wheat, though not so great as with oats, is still very considerable. It amounts to 1,812,000 acres, or an increase of 33 per cent. The total increase in the acreage sown to fall wheat and oats is 3,700,000, or more than 10 per cent of the land planted in cotton in the spring of 1914. Even if the spring seedings of oats and wheat show no departure from the practice of former years, this decrease of 10 per cent in the cotton acreage will be appreciable.

The following table shows, by States, the estimated increases in the fall seedings of wheat and oats and the percentages of the cotton acreage of 1914 that they represent:

State.	Fall-sown wheat.		Fall-sown oats.		Cotton, acres, 1914, preliminary.	Per cent of increase, fall-sown, to cotton acreage.
	Increase, per cent.	Increase, acres.	Increase, per cent.	Increase, acres.		
North Carolina	75	470,000	56	98,000	1,600,000	36
South Carolina	200	164,000	112	336,000	2,800,000	18
Georgia	118	170,000	96	328,000	5,375,000	9
Florida	.....	.....	64	20,000	195,000	10
Alabama	185	63,000	116	258,000	3,875,000	8
Mississippi	125	1,000	147	156,000	3,120,000	5
Louisiana	.....	.....	189	94,000	1,360,000	7
Texas	20	228,000	66	291,000	11,930,000	4
Arkansas	44	56,000	211	154,000	2,525,000	8
Tennessee	20	145,000	127	124,000	890,000	30
Oklahoma	20	515,000	133	44,000	2,825,000	20
Total above	33	1,812,000	102	1,903,000	36,722,000	10

The increase in the acreage sown to fall wheat and oats in the cotton States appears to have been about 3,700,000 acres, or over 10 per cent of the acreage planted to cotton last year. Reports received indicate an intention to increase considerably the acreage of spring planting of corn and spring-sown oats.

ADULTERATION OF OATS TO BE STOPPED.

Seventy-five carloads of oats intended for export have recently been seized by the Federal authorities because they were found to be adulterated within the meaning of the food and drugs act. The adulteration charged is the addition of feed barley or water, or both. Under certain circumstances adulteration in these ways may be so profitable that it is believed to be at times a common practice among grain shippers. The Government, however, is determined that the practice shall cease at once, and field representatives of the department have all been instructed to exercise the utmost vigilance in detecting future shipments adulterated in this way.

Low-grade barley, which is known to the trade as "feed barley," is sometimes mixed with oats when there is sufficient difference between the prices of the two grains to make this profitable. This "feed barley" is the product which remains after the best grade of the grain has been separated and removed for malting purposes. It contains material percentages of weed seeds, foreign grains, and dust, and the addition to oats of such a product is held to be a violation of the food and drugs act. The addition of water to oats arises from the fact that the grain is sold by weight. Investigations of the Department of Agriculture have revealed the fact that water is sometimes added in the amount of from 2 to 4 per cent.

In the opinion of the Government officials there is no reason why either of these practices should be tolerated. Grain shippers and dealers, therefore, are being warned that the prevalence of the custom in the past will not affect the legal proceedings against future shipments found to be adulterated in this way.

$2,500,000 FOR FOOT-AND-MOUTH DISEASE.

Under the recent urgent deficiency act which was signed by the President on January 25, $2,500,000 is now available for the eradication of the foot-and-mouth disease. Up to January 1, 1915, the outbreak had cost the Federal Government a total of $2,129,138.04. Of this sum $1,840,328.99 represents the Federal Government's share of the expense of slaughtering affected herds and reimbursing the owners for their loss, of which the Government pays half and the individual States the remainder. The figures show that exclusive of the work in January 101,176 animals have been slaughtered. Of these 46,268 were cattle, 47,735 swine, and the remainder sheep and goats.

The money now at the disposal of the department will, it is believed, aid the campaign against the pestilence by enabling the Government to make prompt payment to all owners of infected herds, and thus minimize the reluctance of farmers to have their stock slaughtered. In Illinois, for example, approximately $600,000 is now available for this purpose. The loss

in that State has been larger than in any other, 36,758 animals altogether having been slaughtered. Pennsylvania comes next with 17,896 animals, and Ohio third with 10,111. None of the 16 other States in which there was an outbreak has lost as many as 8,000.

In those States in which the local quarantines have been rigidly enforced and in which the farmers themselves have aided the authorities to stamp out the disease, satisfactory progress has been made at a smaller expense than was at one time feared. Indiana and Michigan, where the disease originated, were, for example, at first hard hit. Much of that territory is, however, now entirely freed from quarantine and in only a small area is the movement of live stock absolutely prohibited. In Indiana 6,127 animals were slaughtered, and in Michigan 7,728.

While Illinois and Pennsylvania are probably to-day the most seriously affected of all the States, there is, it is said, every reason to believe that energetic measures will stamp out the pestilence there as well as elsewhere. Although large quantities of stock have been affected already, the number up to the present is small in comparison with the total quantity in those States. In Illinois there were approximately 2,500,000 head of cattle at the beginning of the outbreak. Of those 14,653 have been slaughtered. Out of approximately 4,500,000 hogs only 21,587 had been killed up to January 1. Of the 150,000 farms in that State about 500 have been involved.

CONSPIRACY TO VIOLATE FOOD AND DRUGS ACT AND OTHER FEDERAL STATUTES BRINGS HEAVY PENALTIES.

Conspiracy on the part of two or more people to violate the food and drugs act and other Federal statutes has recently brought heavy fines, coupled with loss of citizenship, to certain dealers. In a certain case, the department has lately cooperated with another Federal department in bringing a criminal action and in helping to secure the conviction of a prominent coffee merchant and a shipping agent for conspiracy to violate the food and drugs act, involving the shipment of coffee in interstate commerce from New York to the West. In these cases the two defendants were each fined $3,000 and by reason of their conviction of a felony lost their citizenship under the provisions of a New York statute.

In another action in cooperation with the Customs Service, the department was of assistance in the proceedings that resulted in the imposition of a fine of $5,000 in the Massachusetts Federal court on one defendant engaged in tampering with revenue import stamps and selling domestic liquors as imported. A second defendant is now awaiting sentence. In two other jurisdictions, the department assisted in procuring the indictment for conspiracy to violate the food and drugs act of a number of egg handlers who have been illegally shipping spoiled eggs in interstate commerce for food purposes.

In a number of other cases, especially concerning drug matters and the prevention of the sale of worthless so-called curative devices, the department has cooperated with the Post Office authorities in bringing actions and securing convictions for violations of the postal laws involving misuse of the mails.

SPRING SHOOTING OF MIGRATORY BIRDS ABSOLUTELY PROHIBITED.

From the number of letters which they have received on the subject recently, officials of the department believe that sportsmen may unintentionally violate the provisions of the Federal migratory bird law, which it is the purpose of the Government to enforce rigidly. Under the provisions of this law no waterfowl can be shot in the northern or breeding zone after January 15, except in New Jersey, where the season extends to February 1. In most of the southern or wintering zone the season closes February 1, but extends to February 15 in Florida, Georgia, and South Carolina. These regulations were proclaimed on October 1, 1914. No change has since been made in them, and no change is likely to be made until the constitutionality of the law has been passed on by the United States Supreme Court. As a matter of fact, the law provides that all changes in the regulations must be considered for a period of 90 days, and then must be approved and signed by the President before they become effective. It is thus evident that there is no possibility that the prohibition of spring shooting will be in any way modified this year.

The officials of the department who are intrusted with the enforcement of the law are anxious that these facts be impressed upon the people because it is the intention to investigate carefully all reports of violations made to the department's inspectors and wardens and to prosecute all such violations in the Federal courts. In this connection it is pointed out that prosecutions may be instituted at any time within three years of the offense.

HOW ICE SHOULD BE STORED FOR COUNTRY USE.

Ice is a very perishable commodity and, therefore, certain important principles must be considered in the construction of a place to store it. Investigators of the department consider that there are four important things to be considered in order to keep ice well. These are as follows:

1. The ice must have a minimum of surface exposed to the air or to the packing material. This is most easily accomplished by piling the ice in the form of a cube. A mass of ice 12 by 12 by 12 feet exposes less surface than the same tonnage piled in any form less nearly that of a cube or of a globe.

2. The keeping of good ice depends upon the completeness of its insulation, whereby it is protected from external influences, such as heat and air.

3. Drainage is important because the lack of it interferes with the insulation.

4. The ice itself must be packed so as to prevent as completely as possible the circulation of air through the mass. The more nearly the mass of ice approaches that of a solid cube, both in shape and texture, the easier, with good drainage and insulation, will be the keeping problem. The keeping of ice, then, depends upon the shape of the mass, its insulation, its drainage, and its solidity.

The ease and rapidity with which ice may be gathered depends upon the condition and location of the field as well as upon the tools used for doing the work.

If the ice field is covered with snow the formation of ice will be retarded, as the snow acts as a blanket and raises the temperature, thus retarding the ice formation. If the ice sheet is sufficiently thick and snow falls upon it, the snow must be removed before harvesting can proceed; or if, on the other hand, it is desirable to increase the thickness of the ice after the snow falls, the field may be flooded and the snow saturated with water, which is allowed to freeze, thus adding a layer of snow ice. Flooding on small fields may be accomplished in either of two ways: By "overflowing," which consists merely in conducting water to the field, or by piercing the ice field here and there with a bar or auger, to allow the water to force itself to the surface and gradually to saturate the snow.

Snow may be removed from small fields, when necessary, by means of shovels, but upon large fields it will be economical to use horsepower scrapers.

TRAVEL BOOKS BY "UNCLE SAM."

"Geography, Travel, Exploration" is the title of a new free price list just issued by the Superintendent of Documents, Washington, D. C., in which are enumerated many Government publications containing information regarding places at home and abroad. Any one of the publications may be had by forwarding a nominal sum covering cost of issue, to the Office of the Superintendent. Prices range from 3 cents to $9, most of the sums, however, being less than $1.

Numerous pamphlets listed in this collection describe different parts of the United States and its Territories, geographically, geologically, and historically. Among these are such special pamphlets as:

Origin of Certain Place Names in the United States. Price, 20c.
Secret of the Big Trees of California. Price, 5c.
Reports of the Governor of Arizona. Prices ranging from 5c. to 25c. each. (These contain information about prehistoric ruins, canyons, climate, resources, etc.)
Papers Relating to Improvement of Washington, D. C. Price (cloth), $1.
Areas of Acquisitions to Territory of United States. Price, 25c.
Areas of United States, States, and Territories (with map). Price, 10c.
Old Maps Relating to America. Price (cloth), $1.50.
National Reservations for Protection of Wild Life. Price, 5c.
Aurora Borealis, Its Phenomena and Laws. Price, 70c.
Icebergs and Their Location in Navigation. Price, 85c.

Among Uncle Sam's miscellaneous pamphlets and books dealing with other lands are such as:

German Colonies. (Account of the rise and development of German colonial possessions.) Price (cloth), $1.
Mediterranean Peoples. Price (cloth), $1.75.
Iceland, Its History and Inhabitants. Price (cloth), $1.25.
Capitals of America. Price, 25c.
Cathedrals of the New World. (North or South America.) Price, 25c. each.

A number of the publications deal with South American countries and capitals, Panama, Mexico, and the West Indies. Others deal with arctic and antarctic explorations; still others take the reader to strange places in Asia, Africa, or Australia.

Anyone interested in this price list (No. 35), which enumerates these "travelogues," may obtain a copy by sending a postal to the Superintendent of Documents, Washington, D. C. *Do not write to the United States Department of Agriculture for this price list or publications listed.*

REMEDIES FOR INDIGESTION MUST BE PROPERLY PREPARED AND SOLD WHILE FRESH.

The Service and Regulatory Announcements of the Bureau of Chemistry of the department state that examination of a number of products which purport to contain certain enzyms or ferments supposed to be useful in promoting digestion shows that these contain little, if any, of these active agents. Further investigation shows that the manufacturers frequently have employed a sufficient quantity of pepsin, diastase, pancreatin, trypsin, or similar material, but in many cases no attempt has been made to determine whether the material used is really active. In certain cases manufacturers have combined pepsin and trypsin, which tend to negative each other, and in other cases they have used its pepsin in alkaline media, which destroy activity, and have combined trypsin with acid substances which are not suited to it. Under certain methods of preparing the remedies, heat is applied to a degree that may destroy the activity of the pepsin or other enzyms. Similarly, many of these substances which owe their properties to the action of enzyms are put up in too strong alcoholic solutions or in other ways which lessen their effectiveness.

The great trouble with many of these preparations, however, is that they do not keep well, and while active at first, after a time lose their digestive activity. The Department of Agriculture therefore warns manufacturers that preparations claiming to contain digestive enzyms should be put up in such a way that they will have suffered little, if any, loss of activity when sold to the consumer.

In the case of preparations which are liable to deterioration within a few months, the department suggests that each lot should be dated, and that sales after a certain fixed time should be prevented.

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INSECT PESTS DESTROYED BY SHEEP AND USELESS VEGETATION TURNED INTO MUTTON AND WOOL.

HOW SHEEP MAY BE USED TO DESTROY INSECTS THAT WINTER ALONG NEGLECTED ROADSIDES AND FARM FENCES.

That many insect pests are protected during the winter by useless vegetation along country roadsides, and that the insects may be destroyed and the undergrowth may be turned into valuable mutton and wool, are facts not generally realized by farmers. The department's specialist in charge of cereal and forage-insect investigations recommends the pasturing of a flock of sheep in these places during the winter months as a most valuable measure for destroying great numbers of insects that might later in the spring spread to and breed in adjoining fields of grain. Where weeds are outside of a fence, or where no crop is growing in the field, pasturing sheep in summer will, of course, keep down the fall crop of insect-harboring vegetation.

The amount of land covered by useless matted vegetation growing along ditch banks, fences, and roads is of no small extent in America. This land, as a rule, can not be burned over because of the danger to fences. Besides, much of the common blue grass thriving in such localities is always too green to burn and serves to protect the thick mulch of dead grass that accumulates beneath from year to year and forms an ideal refuge for all manner of pests. A small flock of sheep, given the range of fields and roads at this season of the year and where there are no growing crops, will dispose of nearly all useless vegetation. Only a little grain need be added to fatten them. If the farmer does not wish to keep the sheep permanently, he may often purchase "feeders" in carload lots at the large stockyards when they are just in condition to be fattened and later dispose of them.

SHEEP CLEANING UP USELESS VEGETATION ALONG ONE SIDE OF ROAD IN WINTER. CONTRAST WITH OTHER SIDE WHERE SHEEP HAVE NOT BEEN PASTURED.

Over the prairie country sheep will eat off grass and shoots of larger brush and plants, leaving the ground so bare of protection that insects either will not congregate there or gain protection there after the pasturing is done. In the East, where trees, bushes, and brambles enter into consideration, if this brush is cleaned off in spring the sheep will in late fall dis-

pose of the young growth that may push up through the summer. By herding the sheep along the roadsides and properly shifting them about according to condition in the fields, all of this waste ground can be made to yield a return to the owner, and incidentally add to the value of the farm.

On account of their light weight, sheep can be pastured in fields when the ground would be too wet for heavier animals. Their small feet, entomologists find, are also more effectual in destroying insects on the surface of the ground than the hoofs of larger animals.

METHOD SHOULD LESSEN DEPREDATIONS OF MANY PESTS.

The list of dangerous pests that winter along neglected roadside margins is long and formidable. The chinch bug, the spring grain aphis, or "green bug," and the clover and alfalfa seed chalcis fly have all been found by investigators wintering in great numbers in such undergrowth. Under certain favorable conditions in the fall the Hessian fly also breeds freely in quack grass, and in Canada one specialist has traced the western grass-stem sawfly directly from this grass to the wheat fields. This sawfly does considerable damage to wheat in the Dakotas. Young stalk borers (*Papapiema nitela*) were noticed in very young oats as early as 1884 by the department's specialist under conditions indicating that the parent moths had spent the winter in the matted grass along the border of the fields.

The department's investigator has successfully put the winter sheep-grazing plan into practice with some 3 miles of roadside and even more of fence margins. Many successful farmers have also tried it with profit, but they have not always realized that in addition to the destruction of the useless vegetation they were destroying insect pests that would have become positively dangerous later on.

SMALL GRAINS AND ALFALFA FOR HOGS.

The growing of swine and the production of pork are industries that to-day are claiming increasing attention throughout the Northwest. Experiments with grains which may take the place of corn for feeding purposes are of the greatest interest to farmers in this region, because the small grains are often grown in abundance and form the basis of all rations. A great amount of wheat, barley, and rye is fed in the form of mill products, and is of course ground. In common practice, also, these grains are ground more generally than corn, as they are usually much harder. The greater liability of these small grains to pass through the animal undigested shows the correctness of such practice.

BEST RESULTS WITH WHEAT.

Chief among the small grains is wheat, and it appears to be the food best adapted for long-continued hog feeding. The advisability of feeding wheat or any other grain, however, depends upon market prices and economic conditions. It could hardly be regarded as economical to use wheat as stock feed at the high prices now prevailing. A bushel of wheat properly fed to reasonably well-bred hogs should produce approximately 13 pounds of gain in weight. The results of a number of feeding tests show that there is comparatively little difference in feeding value between wheat and corn for swine.

In comparing various rations in which corn, wheat, and rye were fed alone or in combination with each other, it was found that dry, ground wheat gave the greatest returns and required the least amount of grain to make 100 pounds of gain. Wheat should be ground and mixed with some supplement, such as tankage, peas, or soy-bean meal. The results obtained from a number of tests have proved this to be a good practice.

BARLEY PRODUCES BEST PORK.

In Great Britain and northern Europe barley takes the place of corn for pork production, leading all grains in producing pork of fine quality, both as to hardness and flavor. Considerable study in the United States has been made of the value of barley as pig feed, and the results have shown that it compares very favorably with corn, but has a feeding value somewhat below that of wheat. What this grain may lack in feeding value, however, it more than supplies in its effect on the carcass. As a high-grade pig feed it far surpasses any other grain, and this fact makes possible the production of pork of the first quality in regions where barley is produced abundantly. Ground or rolled barley is best fed in combination with wheat middlings, skim milk, roots, alfalfa, etc.

VALUE OF RYE.

Rye meal ranks a little below corn and about equal to barley meal as a feed for swine. Rye produces satisfactory pork, especially when it is fed with other grains. It is an extremely heavy, concentrated feed and will usually give best results when fed not to exceed one-third of a ration. In many sections rye is much esteemed as pasture, especially where the soils are rather light, and in such instances "hogging off" proves profitable.

ALFALFA PASTURE AND HAY.

Since economical pork production depends largely upon the consumption of a great deal of cheaply grown feed, the pasture should be managed so that the forage produced will be clean, tender, and palatable. Many successful hog raisers prefer to use such crops as alfalfa and clover for both pasture and hay at the same time. The number of hogs generally turned into a field is so limited that the usual crops of hay are made.

The newer irrigated sections have thousands of acres in alfalfa which may be utilized to great advantage by pasturing with hogs. Alfalfa, while adapted to the same territory as clover, has a much wider range of usefulness, for it succeeds with less rainfall and on lighter soils than clover. Where the land is to be used continuously for hog pasture for a number of years, alfalfa easily stands first. An acre of alfalfa will keep from 15 to 20 pigs during the summer, and with grain in addition will make very profitable gains and a high quality of pork.

Alfalfa hay is often used for feeding to hogs in the dry lot. It may be fed whole, chopped, or ground. The results of five years' work at the Nebraska Station indicate that for fattening hogs the way to feed alfalfa hay most satisfactorily is without grinding or chopping. While the cost of producing pork may be reduced materially by the use of alfalfa hay, or alfalfa pasture, it is desirable to feed grain or other concentrated feed in addition. Alfalfa is too one-sided for a ration unless supplemented with grain. Mature hogs, however, are maintained in apparently satisfactory condition on alfalfa alone.

AMOUNT OF GRAIN FED WITH PASTURE.

Hog growers differ quite widely regarding the quantity of grain that should be fed while on pasture. Some feed a full grain ration; that is, all the hog will consume. Others feed a medium ration, one that is equal to about 2 to 3 per cent of the live weight of the hog. Still others prefer a light ration, one that is equal to about 1 per cent of the live weight of the hog. No definite rule can be laid down, as the amount of grain which should be fed with green pasture depends upon (1) the price of the grain, (2) the amount and quality of the pasture, and (3) the age at which the hogs are to be marketed. However, the feeding of 2 pounds of grain per day for each 100 pounds of live weight will usually give satisfactory results.

When the supplemental grain ration is expensive there is great temptation to place the hogs upon an exclusive pasture ration. This seldom pays, because it takes as much concentrated feed in the end, and sometimes more, to fit hogs for market which have been on a pasture diet as is required for hogs fed grain while on pasture; however, mature breeding stock, or hogs which are nearly grown, can be carried on good pasture until cheap concentrated feed can be supplied.

Hogs feeding upon alfalfa require slightly less concentrated feed than when grazing upon nonleguminous pasture. When a farmer has more hogs than his pasture is capable of supporting, it will be more economical to feed a full grain ration, for the more grain a hog consumes the less he will feed upon the pasture. To finish hogs for market when 7 to 9 months old it is necessary to give them about all the feed they will consume in addition to pasture in order to make them reach the weight demanded by the market, 170 to 225 pounds.

Hogs that are to be marketed when 10 to 12 months old can be maintained on pasture combined with a light grain ration during the grazing season and fattened later. Slow daily gains will result, but most of the growth will be made from cheaply grown forage.

CROPS FOR HOGGING OFF.

In the regions where the small grains and alfalfa flourish it is also possible to provide crops that may be hogged off during several months of the busy season. The crops generally used for this purpose are wheat, field peas, corn, and barley. By supplementing well-managed pasture with the proper grain rations and utilizing the ability of the hog to harvest grain crops for himself, the average cost of producing pork in the Northwestern States may be materially reduced.

NEW PUBLICATIONS.

(January, 1915.)

No publications are sold by the Department of Agriculture; therefore do not send money to this office.

Copies of publications listed herein will be sent free upon application to the Editor and Chief, Division of Publications, Department of Agriculture, Washington, D. C., as long as the supply lasts.

When this department's supply is exhausted publications can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., by purchase only, and at the prices noted herein.

Send all remittances to the Superintendent of Documents direct. His office is not a part of the Department of Agriculture.

COUPON SYSTEM REESTABLISHED.

For the convenience of the general public, coupons that are good until used *in exchange* for Government publications *sold* by the superintendent of documents may be purchased from his office in sets of 20 for $1.

DEPARTMENT BULLETINS.

Correlating Agriculture with the Public School Subjects in the Southern States. 41 Pp. 9 illustrations. Contribution from the Office of Experiment Stations. (Department Bulletin 132.) 10 cents.

This bulletin is prepared especially for the use of rural school teachers in the Southern States.

The Effect of the Cattle Tick Upon the Milk Production of Dairy Cows. (Department Bulletin 147.) 5 cents. 22 Pp. 6 illustrations.

Cows carrying ticks did not hold up so well in milk flow as the cows kept free from ticks and did not increase their flow of milk when the feed was increased, as did the tick-free cows.

Utilization of the Fish Waste of the Pacific Coast for the Manufacture of Fertilizer. 71 Pp. 6 illustrations. (Department Bulletin 150.) 15 cents.

This bulletin discusses the utilization of fish waste in the salmon-canning and similar industries on the Pacific Coast as a source of fertilizer material.

Wireworms Attacking Cereal and Forage Crops. Professional Paper. 34 Pp. 8 illustrations. (Department Bulletin 156.) 5 cents.

Describes a number of species of wireworms and suggests remedies for their control.

Cactus Solution as an Adhesive in Arsenical Sprays for Insects. 20 Pp. Professional Paper. (Department Bulletin 160.) 5 cents.

This bulletin describes the use of cactus solution as an adhesive in the application of arsenical sprays against the belted cucumber beetle. It is applicable to regions where prickly pear is easily obtainable for the treatment of insects of related habits, such as the striped and twelve-spotted cucumber beetles, etc.

A Field Test for Lime-Sulphur Dipping Baths. 7 Pp. 1 illustration. (Department Bulletin 163.) 5 cents.

This bulletin describes a portable testing outfit for estimating the strength of lime-sulphur dipping baths; it is of interest to makers and users of such baths, as well as to officials charged with the enforcement of dipping regulations.

FARMERS' BULLETINS.

Breeds of Beef Cattle. 23 Pp. 18 illustrations. (Farmers' Bulletin 612.)

The distinguishing characteristics of the several breeds of beef and of dual-purpose cattle are presented in this bulletin. The information is of interest to cattle raisers desirous of securing the breed best suited to a particular locality or to certain conditions.

Ice Houses and the Use of Ice on the Dairy Farm. 24 Pp. 11 illustrations. (Farmers' Bulletin 623.)

The use of ice on the dairy farm for the keeping of milk and cream in the best marketable condition is discussed in this bulletin. Plans and specifications for ice houses are given. The bulletin is applicable to dairy sections where natural ice is obtainable.

Growing Peaches: Sites, Propagation, Planting, Tillage, and Maintenance of Soil Fertility. 24 Pp. 7 illustrations. (Farmers' Bulletin 631.)

This bulletin is intended for general distribution. Farmers' Bulletins Nos. 632 and 633 continue the general subject of peach growing and treat of other fundamental orchard operations.

Growing Peaches: Pruning, Renewal of Tops, Thinning, Interplanted Crops, and Special Practices. 23 Pp. 19 illustrations. (Farmers' Bulletin 632.)

This bulletin is intended for general distribution.

The Grasshopper Problem and Alfalfa Culture. 10 Pp. 8 illustrations. (Farmers' Bulletin 637.)

This bulletin describes the species of grasshoppers that work special injury to the alfalfa fields and suggests methods for their destruction. It will be of interest wherever alfalfa is threatened by an attack from these insects.

Laboratory Exercises in Farm Mechanics for Agricultural High Schools. 26 Pp. 26 illustrations. (Farmers' Bulletin 638.)

This bulletin is intended primarily for the use of teachers of high-school agriculture.

Blackberry Culture. 13 Pp. 8 illustrations. (Farmers' Bulletin 643.)

This bulletin is of interest to blackberry growers all over the United States.

CONCRETE AND TILE SILOS ARE DURABLE WHEN PROPERLY CONSTRUCTED.

An anonymous booklet, evidently prepared to discourage farmers from building concrete and tile silos, has recently been circulated in some parts of the country. The booklet consists of photographs of cracked and collapsed silos, and the examples shown represent what may happen when concrete and tile silos are improperly constructed, but they should not be used to discredit these types of silos.

Whenever farm buildings are not permanently located, or if for other reasons a temporary structure is desired, the wooden silo may be preferred to one of concrete or of other durable material. Where lumber is cheap, or where stone and gravel can not be readily obtained, the first cost of a wooden silo may be less than that of a concrete silo. But for a permanent structure it is generally best to construct of tile, concrete, cement block, or some other durable material. Silos properly built of these materials are not likely to be damaged by winds. They must be properly reinforced, however, or they will crack and eventually fall down.

In some cases the cracking of the concrete silo is caused by too small a proportion of cement used in its construction. More often, however, the trouble is due to improper reinforcement. Aside from the matter of reinforcing, most of the failures of concrete silos have been caused by poor and insufficient foundation.

The concrete silo should be built with a solid wall 6 inches thick and reinforced with steel rods or woven-wire fencing. The joints in each course of the wire fencing should overlap and the ends be tied.

It is sometimes stated that the silage next to the wall will spoil for a distance of 6 inches. If the silage is not well packed and if the inside walls are left rough, it will spoil at the edges, but this may happen in any type of silo. If the inside walls are comparatively smooth and coated with raw coal tar thinned to the consistency of paint, and the silo is properly filled, the silage will keep in good condition for several years.

The impossibility of moving is another argument which has been used against concrete silos, but a man who builds for permanence and has a live-stock business definitely established has no occasion for moving the silo.

Some concrete and tile silos have been poorly constructed and improperly filled, but these are not sufficient reasons for condemning these types of silos. The unqualified assertion that tile, concrete, cement-block and brick silos are not durable is not based on facts.

Details for constructing wooden and concrete silos may be obtained by applying to the Department of Agriculture.

NOTICE REGARDING SALE OF COUPONS.

The publications of this department, as well as those of all others, are sold by the Superintendent of Documents, Government Printing Office, who will furnish price lists free.

For the convenience of the general public, coupons which are good until used in exchange for Government publications sold by the Superintendent of Documents, may be purchased from his office in sets of 20 for $1.

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Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

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U. S. Dep. Agr.

RED CLOVER.

Red clover has been justly ranked as the principal foundation of a permanent system of agriculture in the northern and eastern parts of the United States, according to the department's Office of Forage Crop Investigations. This is due to its high feeding value, its effect upon the soil, and the ease with which it may be employed in rotations. Under ordinary conditions red clover is a biennial, although special strains are truly perennial. In pastures where it has been kept from seeding, certain plants have been known to live for three or four years.

USES OF RED CLOVER.

Red clover is an excellent crop for pasture, hay, soiling, and renovating the soil. It can precede or follow almost any other field crop.

Clover makes an excellent pasture for all kinds of live stock. Care, however, must be exercised not to turn sheep or cattle in a clover meadow when they are hungry or when it is wet with rain or dew, since bloating may occur. If but one crop of hay is cut, considerable pasture is furnished during the summer and autumn, but if two crops of hay or one crop of hay and one crop of seed are harvested little pasture will result. Clover will furnish some pasture the fall of the year it is sown, although it should be pastured lightly.

Red clover produces satisfactory yields of hay throughout the clover area. Either two crops of hay or one crop of hay and one of seed may be produced the same season. Since mammoth clover produces but one crop a season it may be pastured until the first part of June. As soon as the stock is removed the meadow should be clipped so that the plants will make a more even growth. Clover hay is a very nutritious feed, being rich in protein and for this reason makes an excellent forage for growing animals and milk cows.

Red clover makes excellent green feed for milk cows. The average yields of green matter of red clover vary from 6 to 12 tons per acre. The season for soiling may commence about 10 days before the plants come into bloom and continue as long as the plants remain green. Bloating does not occur when clover is fed in this manner, but it must not be wet with dew or rain when cut, nor should it be wilted.

As a soil-improving crop red clover can not be excelled. By proper utilization in rotations it is possible to maintain the supply of nitrogen and humus in the soil. Yields of grain crops have been increased as much as 10 bushels to the acre by turning under clover sod. Red clover is sometimes used as a green manure crop. This is to be recommended only where soils are very low in humus and artificial fertilizers are used exclusively.

SOIL REQUIREMENT OF RED CLOVER.

Red clover is best adapted to deep, well-drained clay loams and calcareous loams, which are fairly rich in humus. Sandy soils well supplied with humus also produce good crops of clover. Soils poor in lime will rarely produce good crops of clover unless they contain an abundant supply of humus. With the addition of lime, however, most soils considered to be "clover sick" or "acid" can be made to grow clover satisfactorily. As most soils in the clover belt are becoming "acid" it is recommended that all soils be tested for acidity before being planted to clover. The litmus paper test is simple and fairly reliable. Results, however, should be based not on a single test but on a number of tests with soil collected in different parts of the field. Two to four tons of finely ground limestone or one to two tons of caustic lime should be applied to "acid" soils.

SEEDING RED CLOVER.

Throughout the greater part of the clover belt clover is seeded in the spring on winter wheat or with spring grain. In the southern part of the clover belt seeding in corn at the last cultivation has been successful. When red clover is seeded on winter grain it is sown broadcast early in the spring when the ground is honeycombed by freezing and thawing. If sown later when the ground can be worked it is broadcasted and harrowed in or seeded as shallow as possible with a disk drill. In the spring grain sections red clover is sown at the same time the grain is drilled. It is the practice in some locations to attach a grass seeding attachment to the grain drill and drop the clover seed either in front or behind the grain hose. If dropped in front of the grain hose the drill will cover it, but if dropped behind it should be harrowed in. Care should be taken to see that the seed is covered about 1 inch in loam soils and one-half inch in clay soils. It is important that the seed be well covered so that the young plants will have sufficient moisture to become established. It is recommended on soils which are poor in humus to apply a dressing of straw or manure

to the winter wheat. This will help to control washing and packing as well as the loss of moisture. It may be the means of establishing a stand which would otherwise fail. Eight to ten pounds of seed are usually sown to the acre.

HARVESTING RED CLOVER.

Red clover should be cut for hay when just past full bloom. At this stage the maximum protein and dry matter is present, the leaves are still intact, and the stems green. The hay should be so handled that it will reach the barn or stack with the least possible exposure to the weather and loss of leaves. It should not be allowed to become too dry in the windrow and should be cured in the shock. The second crop of clover may be cut for hay, pastured, or allowed to mature for seed. If a seed crop is to be harvested it should be cut when nearly all of the heads have turned brown or black. The mower, self-rake reaper, or binder may be used to cut the crop. When the mower is used the hay should be raked and bunched while damp to prevent shattering. It should not be tied in bundles when the binder is used.

CLOVER FAILURES.

Observations indicate that failure to obtain a successful stand of clover is due to a number of different causes, any one or any combination of which may react very unfavorably to its growth. The primary causes of clover failure appear to be due to depletion of the humus content of the soil and soil "acidity." Clover will not succeed on poorly drained soil. Lack of fertility reduces the yield in some sections. In the spring grain sections the nurse crop should be seeded from one-half to two-thirds the usual rate.

When a full seeding of the nurse crop is made, and this is especially true of oats, the greater portion of the soil moisture is used by the grain. The clover plants thus become weakened and when the grain is cut they are killed by the hot sun before they have time to recover. Alsike clover does well on soil which will no longer grow red clover, and where moisture is sufficient it is recommended that alsike be planted. Sweet clover or soy beans are very good soil renovators, and they may replace red clover in the rotations until the soil is in such condition that red clover will succeed.

TREND OF PRICES OF FARM PRODUCTS.

According to the department's Bureau of Crop Estimates, the level of prices paid to producers of the United States for the principal crops increased about 11.2 per cent during January; in the past seven years the price level has increased during January about 2.1 per cent.

From January 1 to February 1 the price of wheat increased 21 per cent, corn 11 per cent, oats 11 per cent, barley 16 per cent, rye 12 per cent, buckwheat 7 per cent, potatoes 1 per cent, flaxseed 21 per cent, hay 4 per cent, cotton 12 per cent, chickens 3 per cent; butter declined 3 per cent and eggs declined 8 per cent.

On February 1 the index figure of crop prices was about 6.4 per cent higher than a year ago, 24.8 per cent higher than two years ago, and 11.1 per cent higher than the average of the past seven years on February 1.

The level of prices paid to producers of the United States for meat animals decreased 0.6 per cent during the month from December 15 to January 15. This compares with an average increase from December 15 to January 15 in the past four years of 1.8 per cent.

On January 15 the average (weighted) price of meat animals—hogs, cattle, sheep, and chickens—was $6.57 per 100 pounds, which compares with $7.05 a year ago, $6.40 two years ago, $5.44 three years ago, $6.40 four years ago, and $6.67 five years ago.

The average prices to producers for the entire United States, on dates indicated, are as follows:

		Feb. 1, 1915.	Feb. 1, 1914.
Wheat	bushel	$1.299	$0.816
Corn	do	.728	.683
Oats	do	.501	.393
Barley	do	.629	.524
Rye	do	1.006	.617
Buckwheat	do	.837	.756
Potatoes	do	.504	.697
Flaxseed	do	1.637	1.278
Cotton	pound	.074	.119
Butter	do	.279	.274
Chickens	do	.115	.117
Eggs	dozen	.292	.284
Hay	ton	11.69	12.41
		Jan. 15, 1915.	Jan. 15, 1914.
Apples	bushel	$0.693	$1.106
Beans	do	2.63	2.17
Onions	do	.839	1.21
Cabbage	hundredweight	1.36	1.87
Turnips	bushel	.491	.568
Clover seed	do	8.51	7.99
Alfalfa seed	do	7.61	6.55
Timothy seed	do	2.63	2.07
Broom corn	ton	66.26	94.38
Cotton seed	do	18.97	22.70
Hogs	hundredweight	6.57	7.45
Beef cattle	do	5.99	6.04
Veal calves	do	7.66	7.89
Sheep	do	4.95	4.67
Lambs	do	6.47	6.16
Wool, unwashed	pound	.186	.157
Milch cows	head	58.48	57.99
Horses	do	129.69	137.46

TO WHAT FAMILY DO YOUR POTATOES BELONG?

"To what family do your potatoes belong?" The farmer who desires to know may obtain some enlightenment from a new bulletin of the department entitled "Group classification and varietal descriptions

of some American potatoes." This is a professional paper and deals in detail with each potato family considered.

A more intimate knowledge of the potato is much to be desired, not only by scientists, but by the farmers who grow them. If the latter can recognize old varieties under new names, he will not be deceived by the present practice of some seedsmen who manufacture new varieties from old ones.

The bulletin does not claim to present a complete classification of all American potatoes, but endeavors to offer a list that may prove a starting point upon which to enlarge later on. The bulletin gives the following "classification key" briefly describing each of 11 groups:

CLASSIFICATION KEY.

Group 1.—Cobbler.
Tubers: Roundish; skin creamy white.
Sprouts: Base, leaf scales, and tips slightly or distinctly tinged with reddish violet or magenta. In many cases the color is absent.
Flowers: Light rose-purple; under intense heat may be almost white.

Group 2.—Triumph.
Tubers: Roundish; skin creamy white, with more or less numerous splashes of red, or carmine, or solid red; maturing very early.
Sprouts: Base, leaf scales, and tips more or less deeply suffused with reddish violet.
Flowers: Very light rose-purple.

Group 3.—Early Michigan.
Tubers: Oblong or elongate-flattened; skin white or creamy white, occasionally suffused with pink around bud-eye cluster in Early Albino.
Sprouts: Base light rose-purple; tips creamy white or light rose-purple.
Flowers: White.

Group 4.—Rose.
Tubers: Roundish oblong to elongate-flattened or spindle-shape flattened; skin flesh colored or pink, or (in the case of the White Rose) white.
Sprouts: Base and internodes creamy white to deep rose-lilac; leaf scales and tips cream to rose-lilac.
Flowers: White in sections 1 and 2; rose-lilac in section 3.

Group 5.—Early Ohio.
Tubers: Round, oblong, or ovoid; skin flesh colored or light pink, with numerous small, raised, russet dots.
Sprouts: Base, leaf scales, and tips more or less deeply suffused with carmine-lilac to violet-lilac or magenta.
Flowers: White.

Group 6.—Hebron.
Tubers: Elongated, somewhat flattened, sometimes spindle shaped; skin creamy white, more or less clouded with flesh color or light pink.
Sprouts: Base creamy white to light lilac; leaf scales and tips pure mauve to magenta, but color sometimes absent.
Flowers: White.

Group 7.—Burbank.
Tubers: Long, cylindrical to somewhat flattened, inclined to be slightly spindle-shaped; skin white to light creamy white, smooth and glistening, or deep russet in the case of section 2.
Sprouts: Base creamy white or faintly tinged with magenta; leaf scales and tips usually lightly tinged with magenta.
Flowers: White.

Group 8.—Green Mountain.
Tubers: Moderately to distinctly oblong, usually broad, flattened; skin a dull creamy or light russet color, frequently having russet-brown splashes toward the seed end.
Sprouts: Section 1—base, leaf scales, and tips creamy white; section 2—base usually white, occasionally tinged with magenta; leaf scales and tips tinged with lilac to magenta.
Flowers: White.

Group 9.—Rural.
Tubers: Broadly round-flattened to short, oblong, or distinctly oblong-flattened; skin creamy white.
Sprouts: Base dull white; leaf scales and tips violet-purple to pansy violet.
Flowers: Central portion of corolla deep violet, with the purple growing lighter toward the outer portion; five points of corolla white.

Group 10.—Pearl.
Tubers: Round-flattened to heart-shape flattened; usually heavily shouldered; skin a dull white, dull russet, or brownish white in section 1 or a deep bluish purple in section 2.
Sprouts: Section 1—base, leaf scales, and tips usually faintly tinged with lilac; section 2—base, leaf scales, and tips vinous mauve.
Flowers: White.

Group 11.—Peachblow.
Tubers: Round to round-flattened or round-oblong; skin creamy white, splashed with crimson or solid pink; eyes usually bright carmine. Includes some early-maturing varieties.
Sprouts: Base, leaf scales, and tips more or less suffused with reddish violet.
Flowers: Purple.

In deciding upon the name by which each group shall be known an attempt has been made to select that of the variety which seems most nearly to represent the group as a whole and which at the same time is most widely known.

Each of the groups is described in greater detail in the bulletin, as for instance:

TRIUMPH GROUP.

The Triumph group is composed of a few very early varieties having roundish tubers and a dwarf habit of growth. Only one member of this group, the Triumph, can be regarded as having any considerable commercial importance.

Description.—Ripens very early, but the yield is low. Vines dwarfed and fairly compact, not much branched. Stems short, stocky, dark green. Leaves medium large and dark green. Flowers purple or rose-lilac. Tubers round with blunt to obtuse ends, slightly to distinctly shouldered. Eyes medium in number and depth; budeye cluster generally deeply set. Skin creamy white, occasionally with pink eyes or splashed (as in White Triumph) with few or many splashes of crimson (as in the Quick Lunch and Noroton Beauty) or solid red, or occasionally splashed with carmine (as in the Triumph). Flesh a creamy white. Sprouts have base leaf scales, and tips more or less deeply diffused with reddish violet.

The descriptions of varieties printed in the bulletin cover only about one-fifth of the varieties upon which the department's scientists have been working. It has been the object to include in the list mainly those whose commercial importance or value from the standpoint of the plant breeder make them of more general interest. The plant breeder in particular may gain some assistance from this list, as it may give him some idea as to what can be expected from the union of any two given varieties.

THIRTY MILLION ACRES OF SOILS SURVEYED.

According to the annual report of the Bureau of Soils of the department, 29,984,000 acres of soils were surveyed during the fiscal year ending June 30 last. Detailed soil surveys were completed or begun in 90 different areas, located in 29 different States. These covered 35,721 square miles, or 22,861,440 acres.

In addition, reconnoissance surveys covering 11,129 square miles, or 7,122,560 acres, were conducted in California and Wisconsin. The detailed surveys are mapped on a scale of 1 inch to the mile, and the reconnoissance surveys on a scale of one-fourth inch to the mile. The total area covered by detailed surveys up to and including June 30, 1914, amounts to 329,539 square miles, or 210,904,960 acres, and by reconnoissance surveys, 434,049 square miles, or 277,791,360 acres.

BIRDS DESTROY CERTAIN INSECTS AND WEED SEEDS AND ARE USEFUL TO THE FARMER.

How birds which destroy harmful insects and weed seeds may be useful to the farmer is described in a new Farmers' Bulletin (No. 630) of the department entitled, "Some Common Birds Useful to the Farmer." The new publication has 27 pages and 23 illustrations (not colored) of the birds described. It contains much of the information included in one of the department's former publications entitled, "Fifty Common Birds of Farm and Orchard." The department's supply of this latter pamphlet has been exhausted and it can now only be obtained from the Superintendent of Documents, Washington, D. C., where it is sold at 15 cents a copy. It contains numerous colored illustrations of the birds mentioned. The new bulletin, "Some Common Birds Useful to the Farmer," will be furnished free to all applicants by the department.

Whether a bird is beneficial or injurious depends almost entirely on what it eats, says the introduction to the new bulletin. In the case of species which are very abundant, or which feed to some extent on the crops of the farmer, the question of their average diet becomes one of supreme importance, and only by stomach examination can it be satisfactorily solved. Field observations are at best but fragmentary and inconclusive and lead to no final results. Birds are often accused of eating this or that product of cultivation, when an examination of the stomach shows the accusation to be unfounded. Accordingly, the Biological Survey has conducted for some years past a systematic investigation of the food of those species which are most common about the farm and garden.

Within certain limits birds eat the kind of food that is most accessible, especially when their natural food is scarce or wanting. Thus they sometimes injure the crops of the farmer who has unintentionally destroyed their natural food in his improvement of swamp or pasture. Most of the damage done by birds and complained of by farmers and fruit growers arises from this very cause. The berry-bearing shrubs and seed-bearing weeds have been cleared away, and the birds have no recourse but to attack the cultivated grain or fruit which have replaced their natural food supply. The great majority of land birds subsist upon insects during the period of nesting and moulting, and also feed their young upon them during the first few weeks. Many species live almost entirely upon insects, taking vegetable food only when other subsistence fails. It is thus evident that in the course of a year birds destroy an incalculable number of insects, and it is difficult to overestimate the value of their services in restraining the great tide of insect life.

In winter, in the northern part of the country, insects become scarce or entirely disappear. Many species of birds, however, remain during the cold season and are able to maintain life by eating vegetable food, as the seeds of weeds. Here again is another useful function of birds in destroying these weed seeds and thereby lessening the growth of the next year.

The new publication discusses the food habits of more than 50 birds belonging to 12 families. Many are eastern forms which are represented in the West by slightly different species or subspecies, but unless the food habits differ they are not separately described. Among the popular birds included are the robin, bluebird, wren, brown thrasher, catbird, bobolink, oriole, crow, cuckoo, and the American sparrow.

SUCCESSFUL DEMONSTRATION WORK IN THE CONTROL OF FOREST PESTS.

The demonstration work in the control of a Dendroctonus beetle, carried out under the immediate supervision of the department in the Yosemite National Park and on the private land of a large lumber company north of Mount Shasta, in California, has resulted in the adoption of a regular insect-control policy by the officials of the Yosemite National Park and by one of the largest timber owners and lumber manufacturers in the State. In the Yosemite Valley and Park 3,904 trees have been treated during 1913 and 1914 at a total cost of $4,713.43, or an average of $1.21 a tree. Of these, 2,018 were infested lodgepole pines and 302 yellow, Jeffrey, and sugar pines. In past years a Dendroctonus beetle has killed from 50 to 100 per cent of the lodgepole pine over vast areas in this region. With the present season's control work it is thought that the pest will be brought under complete control.

The work on the private lands north of Mount Shasta was undertaken in May, 1913, in order to give a practical demonstration of control methods. Only 236 infested trees were treated in that year. An examination of the area in the spring of 1914, however, showed a reduction in the infestation of over 85 per cent. In 1914, 1,076 yellow pine trees were treated at an average cost of $2.34 per tree. With the exception of the salaries of the entomological rangers assigned to the work, the expense of this control project has been borne by the owners of the timber.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1915

Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

VOL. II WASHINGTON, D. C., MARCH 3, 1915 No. 30

U. S. Department of Agriculture

NO SHORTAGE OF FOODSTUFFS LIKELY.

The department issued the following statement on February 17:

The 1914 wheat crop of the United States was estimated to be 891,000,000 bushels. The estimated surplus carried over from the 1913 crop was about 76,000,000 bushels. There was, therefore, a total available supply of 967,000,000 bushels. As the normal annual per capita consumption of wheat in the United States is about 5.3 bushels, 520,000,000 bushels should meet our normal domestic requirements for food; in addition, 90,000,000 bushels are required annually for seeding. Six hundred and ten million bushels, therefore, should supply the normal domestic demand. This would leave a surplus of 357,000,000 bushels. Of this surplus, about 210,000,000 bushels were exported by January 30. This left 147,000,000 bushels, or 40,000,000 bushels more than our average annual export for the past five years, for export between February 1 and the appearance of the new crop, or for carrying over into the next crop year. The amount is sufficient to permit the export of nearly 1,000,000 bushels a day until July 1, before which time the new crop will begin to be available. This is about the average recent exportation.

The large demand for our wheat arises from the fact that there was an estimated world's shortage of over 400,000,000 bushels outside of the United States, from the fact that the Russian exportable surplus of 100,000,000 bushels is not available generally, and from the fact that the belligerent nations are eager to secure food supplies. If it were not for these things, we should be discussing ways and means of disposing of our tremendous surplus of food products.

As has been stated, the new American crop will begin to appear before July. The Argentine crop is now coming on the market. It is estimated that from that source there will be available 100,000,000 bushels. A surplus of 75,000,000 bushels or more from India will be available in May and June. The increase in the fall-sown wheat acreage of the United States in 1914 was 11.1 per cent, or over 4,000,000 acres; in the Northern Hemisphere generally the acreage of winter wheat shows an increase of from 3 to 33 per cent, as follows:

	Per cent.
Denmark	3
Italy	5
Switzerland	10
United Kingdom	10
United States	11
India	22
Canada	33

But suppose a shortage in wheat should develop in the next three months, what would be the situation? There is a great surplus in other food crops in the United States, a number of which can be used as substitutes. Wheat does not constitute more than 12 per cent of the normal diet, about the same as poultry and eggs. Meat and dairy products constitute 48 per cent; vegetables, 11 per cent; fruits, nuts, sugar, fish, and other items the remaining 19 per cent. There are larger supplies of corn and other grains, meat animals, dairy products, potatoes, and fruit at the opening of 1915 than for many years. The most important competing products are corn and potatoes. This is shown by the fact that while the normal consumption of wheat is 5.3 bushels, in Maine it is only 4.7 bushels and in Michigan 5. In the wheat-growing States, where wheat is abundant, such as Minnesota, the average is 7.2, whereas in the South, where corn is much used, the average is 4 bushels. Normally about 3 per cent of the corn crop is consumed as food. Of our total crop about 80,000,000 bushels would be used for food, the remainder for other purposes. The remainder could be used for foods and substitutes used for animals. The potato production in the United States averages 3.8 bushels per capita. This year the available supply is 4.1 bushels. The average price of meat animals was 7 per cent cheaper in January than a year ago, butter 2 per cent lower, the price of chickens slightly lower, of potatoes 35 per cent lower, and of apples it was 37 per cent lower.

It would seem that the United States is not likely to be threatened with a shortage of foodstuffs.

RADICAL CHANGE IN FOOT-AND-MOUTH QUARANTINE.

Two orders, signed February 13, by the Secretary of Agriculture make radical changes in the quarantine regulations for the foot-and-mouth disease. All the territory east of the Mississippi and north of Tennessee is now included in the quarantined area and no shipments of live stock, except for the purpose of immediate slaughter, will be permitted from this area to the South or West. Stock owners, however, in the States of Virginia, West Virginia, Vermont, Maine, and the District of Columbia may ship out their stock

upon affidavit that it has been on their farms for a certain length of time and has not been exposed to any risk of contagion.

This step the authorities believe to be necessary for the protection of the South, Southwest, and West, which have not as yet been affected by the disease. The recent discovery of a few cases where cattle, shipped from areas where the disease had existed, carried it to previously uninfected sections, such as four counties in Kansas, convinced the department that no precautions will make such shipments absolutely safe. The new measure, it is said, should confine the disease to the regions in which it has already made its appearance and in which the work of eradicating it will be pushed as before. All of the large slaughtering centers are within this area and very few shipments for immediate slaughter are expected to be made out of it.

Under the new regulations territory within the area now quarantined, which was formerly free, is designated as restricted territory. In this restricted territory live stock may be moved freely to other points within the same territory, but can not pass beyond the limits of the quarantined area, except for immediate slaughter. The regulations governing the area known respectively as closed, exposed, and modified, remain practically the same as before. From the modified area live stock can be shipped for immediate slaughter to points within the quarantined area and from exposed area as well, after a preliminary inspection and certification by Federal authorities. No stock may be shipped out of the closed area for any purpose and can only be shipped into it for immediate slaughter.

Immediate slaughter is now defined as slaughter within 48 hours after the stock arrives at the abattoir. No reshipments from abattoirs are now permitted. These regulations have been made necessary by the fact that in a number of instances cattle ostensibly intended for immediate slaughter at one abattoir have been held there for several days and then reshipped to other yards where they have been allowed to remain until the disease had actually broken out.

These regulations are embodied in the order known as Bureau of Animal Industry Order No. 234, which defines and classifies the various areas in all the States affected. Another order, Bureau of Animal Industry Order No. 233, requires that on and after February 17, 1915, all live stock, unless intended for immediate slaughter, shall be transported only in railroad cars which have been cleaned and disinfected. This applies to the whole United States.

FARMER'S INCOME TAX.

A recent decision of the Treasury Department settles several points in regard to the calculation of the farmer's income for the purposes of the income tax. The decision, in the form of a circular letter from the Commissioner of Internal Revenue to his collectors, is as follows:

(T. D. 2153.)

Income tax.

Income from farm products and crop-share rentals to be included in the return of income for the year in which sold or exchanged for money or a money equivalent.

TREASURY DEPARTMENT,
OFFICE OF THE COMMISSIONER OF INTERNAL REVENUE,
Washington, D. C., February 12, 1915.

To collectors of internal revenue:

The term "farm" as herein used embraces the farm in the ordinarily accepted sense, plantations, ranches, stock farms, poultry farms, dairy farms, fruit farms, truck farms, and all lands used for similar purposes; and for the purposes of this decision all persons who cultivate, operate, or manage farms for gain or profit, either as owners or tenants, are designated as "farmers."

All gains, profits, and income derived from the sale or exchange of farm products, whether produced on the farm, or purchased and resold by a farmer, shall be included in the return of income for the year in which the products were actually marketed and sold; and all allowable deductions, including the legitimate expenses incident to the production of that year, or future years, may be claimed in the return of income for the tax year in which the right to such deductions shall arise, although the products to which such expenses and deductions are incidental may not have been sold or exchanged for money or a money equivalent during the year for which the return is rendered.

Rents received in crop shares shall likewise be returned as of the year in which the crop shares are reduced to money or a money equivalent, and allowable deductions likewise shall be claimed in the return of income for the tax year to which they apply, although expenses and deductions may be incident to products which remained unsold at the end of the year for which the deductions are claimed. When farm products are held for favorable market prices, no deduction on account of shrinkage in weight or physical value, or losses by reason of such shrinkage or deterioration in storage, shall be allowed.

Cost of stock purchased for resale is an allowable deduction under the item of expense, but money expended for stock for breeding purposes is regarded as capital invested, and the amounts so expended do not constitute allowable deductions except as hereinafter stated.

Where stock has been purchased for any purpose and afterwards dies from disease or injury, or is killed by order of the authorities of a State or the United States, and the cost thereof has not been claimed as an item of expense, the actual purchase price of such stock, less any depreciation which may have been previously claimed, may be deducted as a loss. Property destroyed by order of the authorities of a State or of the United States may, in a like manner, be claimed as a loss; but if reimbursement is made by a State or the United States, in whole or in part, on account of stock killed or property destroyed, the amount received shall be reported as income for the year in which reimbursement is made.

The cost of farm machinery is not an allowable deduction as an item of expense, but the cost of ordinary tools may be included under this item.

Under the sixth deduction enumerated in paragraph B, providing for "a reasonable allowance for the exhaustion, wear, and tear of property arising out of its use or employment * * *," there may be claimed a reasonable allowance for depreciation on farm buildings (other than a dwelling occupied by the owner), farm machinery, and other physical property including stock purchased for breeding purposes; but no claim for depreciation on stock raised or purchased for resale will be allowed.

Farmers who keep books, according to some approved method of accounting, which clearly show the net income, may prepare their

returns from such books, although the method of accounting may not be strictly in accordance with the provisions of this decision.

A person cultivating or operating a farm, for recreation or pleasure, on a basis other than the recognized principles of commercial farming, the result of which is a continual loss from year to year, is not regarded as a farmer. In such cases, if the expenses incurred in connection with the farm are in excess of the receipts therefrom, the entire receipts from sale of products may be ignored in rendering a return of income; and the expenses incurred being regarded as personal expenses will not constitute allowable deductions in the return of income derived from other sources.

Respectfully,

W. H. Osborn, *Commissioner.*

Approved:

W. G. McAdoo,
Secretary of the Treasury.

THIRTY-NINE STATES COMMERCIALLY INTERESTED IN PEACHES.

In at least 39 of our 48 States there are peach interests of commercial importance, according to a new Farmers' Bulletin (No. 631) of the department on "Growing Peaches." This bulletin is the first of three on the general subject of peach growing, which will treat of fundamental orchard operations. The questions of site, propagation, planting, tillage, and soil fertility are treated in the first bulletin now being issued.

In locating a peach as well as any other orchard other advantages must be considered besides the natural ones of climate and soil. If an orchard is too remote from a shipping station, too far away from a suitable market, or located where ice for refrigerator cars can not be conveniently supplied, it may not be possible to grow peaches there profitably.

Peaches may do well on a wide range of soil types, including even some of the moderately heavy clay loams and clays. But whatever the type, a soil must be thoroughly well drained to be suitable for peaches. They will not succeed on poorly drained soils. It follows that the heavy clay types which are so hard and impervious that water does not percolate through them readily are to be avoided as a rule. Moreover, a soil should be moderately fertile. One very rich in nitrogen is not to be desired as a general rule, since it is likely to induce an excessive growth of foliage. On the other hand, the impression which is somewhat common that a poor, unfertile soil is "good enough for peaches" is erroneous.

In districts in which alkali soils occur, sites should be selected with a view to avoiding them. While the peach tree can be grown where there is a limited amount of the alkali salts, they cause disaster if present in large quantities. It is safer, therefore, to avoid them as far as possible.

As a general proposition, a site that is elevated considerably above the surrounding area is to be preferred for a peach orchard. Relative elevation is generally of greater importance than actual elevation above sea level.

It is a well-recognized fact, though one too often overlooked in selecting sites for orchards, that cold air settles to the lower levels. For this reason it is often colder at the lower elevations than it is at higher points in the same locality. This is what is meant by "atmospheric drainage." The occurrence of frost in low places when there is none on elevated areas is thus explained. For the same reason peach buds are often winterkilled or the blossoms are injured by frost in the spring in low places when near-by orchards on higher elevations are injured much less, or even escape entirely.

Where an orchard occupies a site that is adjacent to a large body of water, the importance of a relatively high elevation largely disappears. To be a factor in the matter, however, a body of water must be of sufficient size and depth to have an appreciable influence on the local climate. Because the water warms up in the spring more slowly than the atmosphere, it acts in effect as a refrigerator, making the temperature in its immediate vicinity colder than it is at points somewhat distant from it. For this reason, vegetation within the zone of this influence advances more slowly in the spring than it does outside of that zone. The tendency is for the blossoming of peach trees situated within the zone to be delayed until after the season of spring frosts is past.

In the fall frosts are delayed in a similar manner, except that the large body of water, having absorbed much heat during the summer, cools off in the fall more slowly than the atmosphere, and hence it tends to keep the temperature within its zone of influence warmer than it would otherwise be.

It is because of these reasons that peaches are grown with marked success and injury to the crops by adverse temperature conditions is comparatively infrequent in the portions of New York and the Province of Ontario that border Lake Ontario; in Ohio along Lake Erie; in southwestern Michigan on Lake Michigan; and in some other districts which are adjacent to large bodies of water. As a rule, the zone of influence of bodies of water, such as those named, is rather narrow, usually not extending back from the shore more than a few miles.

The slope or exposure of a site is the point of the compass toward which the land inclines. A question very commonly asked is, "What slope is best?" It is one that admits of no direct answer. No one slope is preferable under all conditions and in all regions. In fact, the influence which a particular exposure may have in the success of an orchard is probably much overemphasized in the popular mind.

As a rule, it is doubtless safe to assume that a site having a moderate slope in some direction is to be preferred for orchard purposes, other things being equal, to one that is level. One having a slope will usually have better soil and atmospheric drainage than a level area.

The new bulletin shows how temperature is a limiting factor in peach growing. It also explains the general features of the propagation of peach trees which should be understood by peach growers, even though the average peach grower is not concerned directly with the subject. The bulletin then proceeds to give details regarding the planting and tillage of the orchard, as well as an explanation of methods of maintaining the fertility of the soil. There are a number of figures illustrating the new pamphlet which may be had by application to the department.

REMEDIES FOR KEEPING THE WHITE ANT FROM DAMAGING TIMBER.

The ravages of the white ant which, because of its insidious work in timber and wood structures, is one of the most destructive insects of North America, can be limited by comparatively simple measures, according to the entomologists of the department. This pest, known scientifically as the termite, attacks bridge timbers, wells, silos, telegraph poles, bean poles, mine props, fence posts, and railroad ties, and the sudden crumbling of wharves, caving in of mines, and the settling in of floors are sometimes directly due to its hidden borings. Such large cities as New York, Cleveland, St. Louis, and Washington have known such serious depredations, and damage occasionally occurs as far north as Massachusetts and Michigan. Throughout the Southern States the termites' ravages are even more general.

Some of the recommendations of the department's entomologist for dealing with this pest are as follows:

Forest products in contact with the ground should be impregnated with coal-tar creosote, which is a permanent preventive against attack by our native termites. Coal-tar creosote has many properties which would recommend its use in this respect, for it is also a fungicide, and, being insoluble in water, will not leach out in wet locations. These requirements furnish objections to many chemicals that otherwise are very effective insecticides.

The various methods of superficially treating timber, as by charring, by brushing, or by dipping with various chemical preservatives, among which are creosotes, carbolineums, etc., have proven to be temporarily effective, in preventing attack, if the work is thoroughly done. If not thoroughly done, termites enter through the untreated or imperfectly treated portions, especially through weathering checks and knots. Where the bases of poles, mine props, etc., are left untreated termites enter the timber from below and, avoiding the treated portions, come up through the interior. Charred timber is effective against termite attack for a period less than a year, although it is not seriously damaged at the end of one year. It will readily be seen that neither brushing nor spraying the exterior after placement, as is sometimes practiced, is effective in keeping out termites, since the portion that sets in the ground could not be treated, and it is usually at this point that termite attack occurs.

Before treating timber with chemical preservatives, especially where the brush method is employed, it is essential that the timber be thoroughly seasoned, otherwise penetration by the preservatives will be retarded.

Many patented wood preservatives advertised as effective against wood borers often merely contain simple preservatives, as, for instance linseed oil, to which a slight odor of oil of citronella has been imparted, or contain simple poisons. For timber to be set in the ground, brush coatings with linseed oil are not effective against termites.

Impregnation with chlorinated naphthalene may prove effective against termites, as a preservative for woodwork in interior finish, where it is important that the preservative should not "sweat" out or stain the wood. Treated wood blocks buried in the ground with termite-infested logs were not attacked after a test of nearly six months. Impregnation with paraffin wax was not effective in the Bureau of Entomology's experiments. If the wood is not in contact with the ground, impregnation treatments with bichlorid of mercury and zinc chlorid are effective. The mercury and zinc in this form are both soluble in water.

COST OF BUILDING A ROD OF FENCE IN NORTH DAKOTA.

The cost of building fence on the ordinary farm in North Dakota is relatively high, as all materials, including posts, must be imported. Where costs are naturally high there is a corresponding need of economy. The figures given in the following table are averages secured from investigational work on many North Dakota farms:

Distance between posts.	Number of barbed wires.	Cost per rod.
1 rod	2	$0.322
1 rod	3	.369
1½ rods	3	.290
1½ rods	4	.335
2 rods	3	.254
2 rods	4	.297
2½ rods	3	.230
2½ rods	4	.274
3 rods	3	.215
3 rods	4	.257
3 rods	5	.300

This table shows cost of construction, and includes all expenses for material and labor. No data is available at present to show relative depreciation and cost of upkeep, but wire undoubtedly lasts much longer than ordinary posts. These items are important, and an attempt will be made to secure this information.

It will be observed that it costs less to use four wires with posts two rods apart than to use two wires with posts one rod apart. In fact, the entire table shows the low cost of wire as compared with posts. The question as to which type is best must be determined largely by the use to be made of the fence.

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THE COMMUNITY ORGANIZED FOR NEIGHBORHOOD PATRIOTISM.

OUTLINE OF A METHOD FOR SECURING COMMUNITY COOPERATION IN BUSINESS AND SOCIAL AFFAIRS.

A scheme for the organization of rural communities for both business and social purposes is worked out in an article which is to appear in the forthcoming Yearbook of the Department of Agriculture and which has already been printed as a pamphlet for the use of the department's Office of Markets and Rural Organization.

The scheme calls for 10 committees, 5 of which are to deal with business needs and 5 with social needs. Every member of the organization is to serve on some one of these committees. In addition there is to be a central or executive committee composed of the president of the organization, its secretary, its treasurer, and the chairman of the 10 other committees. This central body is to direct the general policy of the organization, raise all funds and control their expenditures. The committees that are to deal with the business interests of the community are as follows:

1. Committee on farm production.
2. Committee on marketing.
3. Committee on securing farm supplies.
4. Committee on farm finance and accounting.
5. Committee on communication and transportation.

Similarly, the five committees that attend to the community's social interests will deal with:

1. Education.
2. Sanitation.
3. Recreation.
4. Beautification.
5. Household economics.

The work of most of these committees is indicated sufficiently clearly by their titles. For example, the committee on production can do much good by improving the breeds of live stock in a community through cooperative purchases of pure-bred males. It can encourage the formation of corn, poultry, pig, cattle, canning, and gardening clubs, which have already demonstrated their value in the sections where they have been established, and it can carry on useful studies of the type of agriculture best fitted to local conditions.

In the same way the committee on marketing can secure the standardization of the community's products, and thus obtain better prices than are possible when nondescript goods are dumped upon the market. The committee can also search out the best markets, make contracts on a large scale which will be more favorable than any individual can secure for himself, and in many other ways economize in the selling of the community's goods. Even if cooperative marketing is not actually resorted to, the information which the committee collects can hardly fail to be of great assistance to the individual shippers.

Just as the committee on marketing can facilitate selling, the committee on farm supplies can economize in buying. Farmers are warned, however, not to underestimate the cost of running a store or commercial agency, and not to overestimate the saving which this can effect. The cooperative society, of course, does away with the necessity of the store's making a profit, but somebody must manage the store and that somebody must be paid for his time. His salary, therefore, corresponds in a way to the ordinary store's profit, and it is not always possible to secure a good man for less than he would be able to make in business for himself. There are, however, several methods of purchasing farm supplies cooperatively which will be found to be of advantage. The simplest is the joint order, in which a group of farmers can buy a given article in large quantities, thereby effecting a considerable saving in the expense of handling, commissions, etc. Sometimes when this method is adopted a warehouse is added, which is owned or rented cooperatively, and in which the goods are stored until the associated purchasers need them.

If these two methods have been tried and found successful, it may be desirable to carry them out to their logical development and conduct a cooperative store which renders the same service to its customers that a private enterprise would. This, however, inevitably leads to complications and should only be undertaken after some experience with simpler methods of cooperation.

With the committee on farm finance and accounting the first duty is to ascertain what farm enterprises can safely be financed. This is only possible when accurate accounts are kept and carefully analyzed. After this has been done, the next step is to secure the most favorable terms for financing proper and sound enterprises. This is frequently not difficult if the committee has thoroughly mastered the subject and is able to put it clearly before local bankers. Where the local bankers are unwilling to

finance genuinely productive enterprises at a reasonable rate of interest, the committee must consider other ways of securing capital. One of the simplest plans for accomplishing this is a credit union or cooperative credit association. The essential features of this plan are that a group of farmers organize themselves to receive deposits and make loans. By keeping the expenses down to a minimum it has been possible in some cases for such associations to pay interest on deposits that is within 1 per cent of the interest it charges on loans.

The committee on communication and transportation should deal primarily with the roads and telephones. The keynote of the work should be organized self-help, not appeals to get Government help.

Just as the five business committees are to grapple with the fundamental problems of producing and selling in their various forms, the five social committees should direct their efforts to the improvement of living conditions in the country.

To increase the farmer's income is not the only thing needed to make rural life what it should be. As a matter of fact, says this article, it is the prosperous farmer who is more inclined to move to town than his less fortunate neighbor. Having accumulated a competance he wishes to enjoy it, and there are five principal reasons which lead him to believe that he can do this better in the city: First, there are usually better facilities for educating his children; second, the sanitary conditions are frequently much better in towns, and the time does not seem to be far distant when the cities will be actually more healthful than the country. Again, household conveniences such as hot and cold water, heating and lighting systems, etc., are more abundant in the towns and add greatly to the comfort of living. Finally, there is more opportunity for recreation in the city, and frequently, strange as it may appear, more to appeal to the sense of beauty that is inherent in practically every man.

Cooperation on the part of rural communities can do as much to alter these conditions as it can to increase the average cash income. The committees that have these matters in charge should, therefore, be regarded as quite as important as those which deal with business questions, and they should receive the same support from the entire community which they are endeavoring to benefit. The result will be a community spirit which, in its way, is capable of producing as valuable results as the national spirit. In fact, says the article in closing, "Patriotism, like charity, begins at home; that is, in the neighborhood."

As an appendix, the pamphlet contains a brief list of suggested readings for the various committees. Many of these are Government publications which may be had free of charge by addressing the Division of Publications of the Department of Agriculture, or at a nominal price from the Superintendent of Public Documents.

A NEW INSECTICIDE.

"Para-dichlorobenzene" is the formidable name of a chemical compound which has only recently been used as an insecticide, but which, in being noninflammable and comparatively inexpensive, possesses advantages over other fumigants. The department's new bulletin (No. 167) is entitled "Para-dichlorobenzene as an Insect Fumigant," and points out that the compound, although deadly to insects, is harmless to human beings under ordinary conditions and does not have an odor which clings to fabrics, as do many insecticides.

DIRECTIONS FOR USING.

Para-dichlorobenzene is applied in most instances in the same manner as camphor and naphthalene. It is not, however, necessary to sprinkle it around in corners or over rugs and other material, as is often the case with camphor and naphthalene, but merely to expose a sufficient quantity in one or two open or partially open receptacles placed over or higher than the infested cases, goods, and material which require fumigation.

HOW PUT UP, AND COST.

Para-dichlorobenzene at the present time is sold in 5, 10, 25, 50, and 100 pound and barrel lots, the prices for which are as follows:

23 cents per pound in 5, 10, and 25 pound lots.
18 cents per pound in 50-pound lots.
17 cents per pound in 100-pound lots.
15 cents per pound in barrel lots.

If any considerable quantity is to be used, it is much better to purchase of some wholesale druggist or direct from the manufacturers.

APPLICABILITY TO VARIOUS INSECTS.

Para-dichlorobenzene is applicable to many insect pests living under various conditions and environment, and therefore requires specific methods of application and, unlike carbon bisulphid, it is at the present time used only indoors and in other places where its vapors can be closely confined. As there is a great variation in the tenacity of life among insects, the existing conditions should be carefully noted before paradichlorobenzene is applied.

Beetles, such as the rice weevil, granary weevil, the confused flour beetle, the cadelle, the yellow meal worm, and a few others less common are particularly hard to kill when in the adult stage. The larvæ of certain other meal worms are likewise found by experiment to possess great tenacity of life. It is therefore recommended that a proportionately larger amount of paradichlorobenzene be used when combating these species. Moths, flies, roaches, ants, and aphides are readily killed by paradichlorobenzene when used in the ordinary strength as previously recommended.

The action of paradichlorobenzene on insects is primarily upon their nervous systems. This property

is readily manifested when a moth is exposed to the vapors for a few seconds. It first displays great excitement and uneasiness, followed closely by spasmodic convulsions, and finally turns over on its back. While in this position violent nervous and muscular reflex action is noticed until life is extinct.

Paradichlorobenzene is a colorless, crystalline substance which evaporates very quickly as a vapor, if exposed.

It is not advisable for sensitive persons to remain for a long time in a closed room where paradichlorobenzene is freely exposed, as the odor may cause annoyance. On the other hand, paradichlorobenzene can be used in closed or occasionally opened cupboards and even in sitting rooms without causing any inconvenience whatsoever.

PROGRESS IN PLANT INVESTIGATIONS.

Satisfactory progress in the standardization of grain has been made in the past year, according to the annual report of the Bureau of Plant Industry of the department for the fiscal year ending June 30, 1914. Tentative grades for corn were first published by the department in August, 1913. With some changes, these tentative grades were promulgated in 1914 as "grades for commercial corn." The various States and commercial organizations which have independent grain-inspection departments have either adopted these grades or declared their intention of so doing. Their great virtue is that they will enable the shipper to ascertain for himself what grade his corn will receive at the inspection point, and at the same time permit the buyer to discover whether or not he has received the grade he ordered. Hitherto all corn delivered at country stations has been bought at practically the same price regardless of its water content or soundness.

For other grains commercial grades will be fixed as soon as possible and the work will be pressed vigorously, especially in the case of wheat. Preparation of official cotton grades has also been continued and good progress made. Spinning tests of the official grades have also been carried out.

In the course of the year the bureau has also carried on considerable work in the investigation of a number of wild sorghums scattered over Africa. The seed of these has been obtained and it seems probable that some of these varieties will be better adapted to the humid conditions of the Southern States than Sudan grass, which is now regarded as the most important hay crop in semiarid regions. Of the new varieties, the most striking at present is feterita.

Other work of particular importance to the South has been the distribution of pure varieties of wheat, oats, and barley adapted to this region. A marked increase in interest in winter cereals in the South has been noted in the course of the year, and has been encouraged in every possible way. Of particular importance, however, is the establishment of the fact that a new cotton industry can be developed in the Southwestern States beyond what have hitherto been considered the limits of the cotton belt. The dry climate affords protection against the boll weevil and allows the cotton to be sent to market in better condition. These advantages, it is thought, will compensate for the higher cost of labor and transportation. Other cotton investigations have dealt with the growing of long-staple cotton of the Egyptian type, with the advantages of late thinning of cotton, and with single-stalk culture, which is adapted especially to regions infested by the boll weevil.

By aiding in forming credit associations to provide the necessary capital, the bureau has also encouraged the production of live stock in regions which are well adapted for forage crops. These crops are too bulky to be transported profitably over long distances, but they can very advantageously be turned into live stock. For this purpose alfalfa is particularly well adapted. In this connection it is noted that in the South and Southwest Peruvian alfalfa is becoming more and more popular. This variety has shown more disease resistance than the common alfalfa.

Another series of investigations in New York and Pennsylvania has demonstrated that both the yield and the quality of the tobacco crop can be improved by the use of potash and phosphoric acid as a supplement to barn manure. In the dark-tobacco district of Kentucky and Tennessee it has also been found that it can be made much more profitable by the liberal use of phosphates. In another division of the bureau's work much progress has been made in improving the methods of transporting and storing such products as grapes, oranges, fresh figs, pineapples, and lettuce. The result of these investigations should be to put these products on the market in much better condition than hitherto, and by doing away with a large percentage of the waste hitherto considered inevitable, make the industries more profitable than before.

In its farm-demonstration work the bureau has devoted particular attention to the sowing of legumes as winter cover crops wherever this is possible. An increase in this practice of more than 300 per cent in the Southern States indicates the success of this campaign. In 1912, for example, 1,000 demonstrations of the value of crimson clover were given on 1-acre lots in Alabama. This resulted in the sowing of more than 100,000 acres of crimson clover in that State the next year. As has already been said, the production of live stock also received much attention and many thousand head of pure-bred stock were brought into the South for breeding purposes. The formation of

pig, corn, and canning clubs has already been encouraged successfully.

In its investigations of various plant diseases the bureau has found a practical method of controlling apple powdery mildew by pruning and spraying. It has also studied the peach-leaf curl, which is a serious source of loss; the possibility of preventing cranberry diseases, the citrus canker, and sugar beet, and sweet potato diseases. Successful methods of controlling the latter have already been demonstrated to growers and a bulletin on the subject issued. Promising methods of overcoming the potato powdery scab have also been developed. This disease, while confined to Maine and a small portion of New York, appears to be more virulent in this country than abroad. Progress in the development of a variety of cotton suitable to boll weevil conditions has also been encouraging.

POTATOES IN PLACE OF BREAD.

If wheat remains at its present high figure or continues to rise in price, and if there is a corresponding increase in the price of bread, scientists in the department suggest that the ordinary household will find it advantageous to eat more potatoes and less bread. With potatoes at 60 cents a bushel, 10 cents' worth, or 10 pounds, will give the consumer a little more actual nourishment than two 1-pound loaves of bread at 5 cents each. The protein and fat are present in appreciably larger amounts in the bread, but the potatoes will be found to furnish more carbohydrates and more heat units.

Carbohydrates (starch) contribute greatly to the energy value of any diet, and since potatoes are rich in these families that wish to expend their money to the best advantage are recommended to consider whether they can not make a more extended use of them. They are easy to cook and when prepared in different ways can be made to lend variety to the winter diet when green vegetables are hard to obtain. Like other foods relatively rich in carbohydrates, however, potatoes should be eaten with foods correspondingly rich in protein, such as milk, meat, eggs, etc., and with foods like butter, cream, and meat fat to supply the fat that the body needs.

Under normal conditions in Europe and America the potato ranks next to bread as a carbohydrate food. If prices change sufficiently to make it desirable from a financial point of view, there is no scientific reason why potatoes should not be substituted to a great extend for bread. In addition the potato, like many fruits and vegetables, helps to neutralize an acid condition in the body. This is another reason for its being eaten in combination with meat, fish, and other animal foods.

THE YOUNG FARMER'S NEED OF A YEARLY BUSINESS INVENTORY.

The young farmer who is endeavoring to build up a more efficient and profitable business seldom retains much cash. When money is received he buys a new implement, another animal, improves a building, or makes payments on bills for things bought on credit. During the course of the year he may receive and pay out large sums of money, leaving almost no cash at the end of the year. The annual returns may seem to have been only a fair living for himself and family, whereas the farm business may have turned a good profit, which was invested from month to month. Hence it is important for the farmer's guidance and encouragement that he make an annual inventory of his farm investments. This inventory should be a detailed list, with values, of everything used in the farm business, including land, buildings, live stock, machinery and tools, produce for feed or sale, supplies, bills receivable, and cash; also a list of all accounts and bills owing. The difference between the total assets and debts shows the net farm worth.

A study of two successive inventories of a farm in New York State illustrates how one young farmer on 100 acres prospered regardless of the fact that he had almost no cash at the end of the year. The total assets at the beginning of the year amounted to $13,090 and to $13,400 at the end of the same year, an increase of $310. The increased investment in live stock, machinery, and tools, and more produce held for sale amounted to $1,073, but this was partially offset by the cash decrease of $763. The farm indebtedness was also reduced by $253, thus making a total increase in net worth to the farm business of $563. The inventory values covered all depreciations and increases in values, so that this $563 was net increase in the value of the farm investment. It means that this sum was saved from the year's business after all farm expenses had been paid, including interest on borrowed money and all living expenses. The amount of cash at the end of the year, $133, proved to be no indication of the success of the year's business.

DEATH OF A VETERAN CROP CORRESPONDENT.

The Bureau of Crop Estimates has received information of the death of one of its veteran voluntary crop correspondents. The field agent for Ohio writes "I am just in receipt of the sad news of the death of Mr. Smith McWilliams, of Galena, Delaware County, Ohio, on January 13, last. Mr. McWilliams was a most faithful and enthusiastic voluntary correspondent of the department for more than 30 years, and, although well advanced in years, being 87 years of age at the time of his death, he continued the reporting work with undiminished zeal until taken with the illness which brought about his demise."

Mr. McWilliams, whose splendid services were greatly appreciated, was representative of the high type of the men who are cooperating to make the Government crop reports dependable, and therefore of maximum benefit. While his record is exceptional, there are at least 40 others who have served as long or longer. A considerable number have reported for 25 years, and increasingly larger numbers for 20 years and less.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1915

Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

VOL. II WASHINGTON, D. C., MARCH 17, 1915 No. 32

LARGE AREA FREED FROM TEXAS FEVER.

More than 28,000 square miles of territory were released by the Secretary of Agriculture on March 1 from the Texas fever quarantine. The order, known as B. A. I. order No. 235, frees 32 counties in the States of California, Texas, Oklahoma, Arkansas, Georgia, South Carolina, North Carolina, and Virginia. Since the work of tick eradication began on July 1, 1906, 25,782 square miles have been freed of the pest.

By the same order Smith County, Miss., which was released last year, is requarantined. This is the first instance of the kind since the campaign began and has been made necessary by the failure of farmers in that county to cooperate with the authorities in keeping the county free after the pest had been stamped out. With this exception the work has made steady progress.

The territory freed by the new order is as follows:

California: San Diego County.

Texas: Sterling and Wilwarger Counties.

Oklahoma: Rogers, Washington, Mayes, Tulsa, Osage, and Creek Counties.

Arkansas: Izard and Sharp Counties.

Georgia: Walker, Catoosa, Whitfield, Murray, Gilmer, Dawson, Forsyth, Milton, Cobb, and Madison Counties.

South Carolina: Chesterfield, Marion, and Florence Counties.

North Carolina: Harnett, Cumberland, Wayne, Greene, and Lenoir Counties.

Virginia: Surry, York, and Warwick Counties.

COOPERATIVE LABOR PLAN.

All members of the Department of Agriculture are urged by the Secretary to assist in the cooperative plan of the Departments of Labor, Agriculture, and the Post Office for the better distribution of labor of all kinds in the United States. The following circulars explain the plan:

UNITED STATES DEPARTMENT OF LABOR,
BUREAU OF IMMIGRATION, DIVISION OF INFORMATION,
Washington, January 8, 1915.

In answering refer to No. 525.

To all officers of the Department of Agriculture:

The Post Office Department and the Department of Agriculture are cooperating with the Department of Labor in aid of the plan for the employment and distribution of laborers in the United States; the former through its postmasters, officers in charge of branch post offices, and rural mail carriers; and the latter through its field and other services throughout the United States, among which you are numbered.

The purpose of this plan is to supply labor where required in every section of the Republic, and your assistance is respectfully solicited. Communications from you concerning the necessity for workers in the locality in which you reside and the vicinity thereof are especially desired. The Department of Labor will appreciate your efforts in notifying farmers and other employers of labor in your neighborhood of the inauguration by said department, with the cooperation of the departments above mentioned, of a plan to furnish farm or other labor at all seasons of the year.

In order to enable you to advise both prospective employers and employees desiring to avail themselves of the opportunities presented by said plan, the following explanation of the methods adopted may be of service: Blanks for use of employers desiring help and for persons seeking employment may be had on request from the postmaster, or officer in charge of any branch post office, or rural mail carrier. All application blanks when filled out and signed should be folded and returned to the postmaster or other officers mentioned, whereupon they will be forwarded to the proper officer of the Department of Labor, where they will receive special and prompt attention. When thus returned no postage will be required; otherwise the usual postage will be necessary.

Respectfully,

A. CAMINETTI,
Commissioner General of Immigration.

Approved:
W. B. WILSON,
Secretary of Labor.

To all officers of the Department of Agriculture:

You are hereby notified that the Department of Agriculture is cooperating with the Department of Labor in aid of its plan for the employment and distribution of laborers in the United States.

Therefore you are hereby authorized and directed to comply with the foregoing request approved by the Secretary of Labor.

Future general instructions, which when issued you are requested to follow, will be printed in the Weekly News Letter.

D. F. HOUSTON,
Secretary of Agriculture.

INSECTICIDE SHIPPER FINED $200.

A recently issued announcement of the Insecticide and Fungicide Board of the department contains a number of notices of judgment of the courts for violations of the insecticide act. A fine of $200 and costs was imposed on the Dr. E. Detchon Medicine Co., Crawfordsville, Ind., for the interstate shipment of a misbranded product called "Woolford's Sanitary Lotion." Misbranding of this article was alleged for the reason that it consisted partially of water, which does not prevent, destroy, repel, or mitigate insects, and the name and percentage amount thereof were not declared

on the label, nor in lieu thereof were the names and percentage amounts of each ingredient having insecticidal properties and the total percentage of the inert ingredient stated on the label.

Other fines mentioned in the recent announcement are as follows:

Product.	Shipper.	Charge.	Fine.
Bordeaux Mixture	Morris Hermann & Alfred Renskorf, New York, N. Y.	Misbranding	$25
"Hammond's Lime Sulphur & Salt" or "Horicum."	Benjamin Hammond, Fishkill-on-Hudson, N. Y.	Adulteration and misbranding.	25
"Krausers"	Daniel M. Krauser & Ellis Krauser, Milton, Pa.	Misbranding	*25
"Ricksecker's Dog Soap"	The Theo. Ricksecker Co., New York, N. Y.	do	25
"Germathol Sanitary Disinfectant."	Pratt Food Co., Philadelphia, Pa.	do	20
"Pratt's Liquid Lice Killer"	do	do	20
"Mulford's Kreol"	H. K. Mulford Co., Philadelphia, Pa.	do	10
"Kretol"	George S. Faucett, West Chester, Pa.	do	10
"Ideal Bordeaux Lead Arsenate Mixture Paste."	Leon. M. Adler, New York, N. Y.	do	10
"Ideal Bordeaux Paris Green Mixture."	do	do	10
"Dent's Mange Remedy"	The Dent Medicine Co., Newburgh, N. Y.	do	10
"Ideal Bordeaux Lead Arsenate Mixture Powder."	Leon. M. Adler, New York, N. Y.	do	5
"Liquor Créosolis Comp., U. S. P."	H. K. Mulford Co., Philadelphia, Pa.	Adulteration and misbranding.	5

*And costs.

Extracts from letters written to individuals by the Insecticide Board are reprinted in the new publication for the benefit of the whole trade. The advice in these letters merely represents the opinion of the board, for legally the board is not authorized to approve, criticize, or suggest labels for use on the products.

One letter deals with the general principles relative to disinfecting with chlorinated lime or bleaching powder and is of aid to manufacturers in preparing bleaching-powder labels. Another letter refers to the labeling of mixtures of cyanides and chlorides or cyanides, chlorides, and carbonates.

WARNING TO PRODUCERS IN OKLAHOMA, TEXAS, AND ARKANSAS AGAINST "HALF-AND-HALF" COTTON.

During the last two years the attention of the department has been directed to the fact that active campaigns have resulted in the introduction into portions of Oklahoma, Texas, and Arkansas of a variety of cotton called "Half-and-half." It is reported that the seed has been sold for as much as $5 per bushel, under the representation that it is an exceedingly prolific variety, yielding 50 per cent of lint, or a 500-pound bale from 1,000 pounds of seed cotton. Many inquiries have been received from planters throughout this section asking for advice concerning this cotton.

The department's representatives have examined many samples of "Half-and-half" cotton from these States and have grown it in experimental plantings and have found it far inferior to cotton ordinarily produced in this section.

The department's field tests on numerous varieties have shown that "Half-and-half" does not maintain a high rank in total lint yield per acre. The large proportion of lint to seed apparently results from the fact that the seeds are very small and light. The danger of judging cotton by lint percentages has been explained in Bureau of Plant Industry Circular No. 11, and the caution has been repeated in United States Department of Agriculture Bulletin No. 60.

The lint of the "half-and-half" variety is of poor character, irregular, wasty, and very short, a large portion of the samples examined being less than seven-eighths of an inch in length of staple. Cotton less than seven-eighths of an inch is untenderable on future contracts made under the provisions of the United States cotton futures act, and therefore buyers will penalize it whenever discovered.

The department is informed that many persons who grew this variety have succeeded in selling it at prevailing prices, but this can not long continue. When cotton of less than seven-eighths of an inch in length sells for full market price, it is because its true character was not detected. Whenever cotton firms find a large part of the cotton in any community falling to seven-eighths of an inch or less in length, buyers will be withdrawn from the district or they will scale down the prices on all grades to meet the lower prices which must be expected for such short staple.

Many interior buyers, as well as practically all the larger cotton firms, have declined to handle this cotton at any price. They state that its lint is far inferior to that commonly grown in their territory and is not acceptable to their regular customers.

Competent spinners have stated that this variety as ordinarily grown produces so short a fiber as to render it wholly unsuitable for the class of work which now consumes the great bulk of the cotton of the western belt.

Before this agitation became general, a high-grade sample of this cotton was submitted by the department to two prominent members of the New Orelans Cotton Exchange, who, on the first attempt to pull the staple, stated that the fiber was so short that it would be rejected as "perished staple" by their classification committee and would not be tenderable on New Orleans cotton contracts. Two members of the New York Cotton Exchange, to whom samples were submitted, made practically the same remarks.

Various cotton exchanges in the Southwestern States have taken official action to prevent the delivery of this cotton on contracts made between their members.

As grown in Texas, it is lacking in storm-proof quality, as the cotton drops from the bolls very easily and the individual seeds often fall apart.

Repeated complaints are received from English spinners of the number of "mixy" bales of American cotton. This condition arises largely through the

introduction of short staple into long staple cotton territory or of long staple into communities growing short staple cotton. Any serious mixing of varieties which have fibers of different lengths results in serious losses in waste whenever the cotton is spun upon machinery adjusted for the longer varieties. Spinners will be quick to discover any serious admixture of shorter and inferior cotton, and the growers will suffer if such varieties become popular in their territory.

In view of these facts the department warns the farmers of Oklahoma, Texas, and Arkansas that the introduction of "half-and-half," or any other variety of cotton-producing fiber of less than seven-eighths of an inch in average length, will be likely to seriously damage the reputation of their local markets, and may result in a few years in basing the price in such markets on this inferior cotton. These same districts are now receiving a slight premium over the regular quotations for short staple. It will be a matter of particular regret to see the results of the campaign which has been carried on by the department in these States in behalf of pure, big-boll varieties (Triumph and Lone Star) jeopardized by the promiscuous introduction of cotton of greatly inferior staple. Such a policy must result in very serious losses to all the growers in the communities where the poorer types become common.

As the seed is the primary factor in determining length of staple and there are early maturing prolific varieties with staple of at least an inch in length, every cotton farmer should secure and plant such seed.

RECENT PUBLICATIONS.

[February, 1915.]

No publications are sold by the Department of Agriculture; therefore do not send money to this office.

Copies of any of the publications listed herein may be obtained free upon application to the Editor and Chief of the Division of Publications, United States Department of Agriculture, Washington, D. C., as long as the department's supply lasts.

When this department's supply is exhausted, publications can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., by purchase only, and at the prices noted herein.

Send all remittances to the Superintendent of Documents direct. His office is not a part of the Department of Agriculture.

Coupon System Reestablished.

For the convenience of the general public, coupons that are good until used in exchange for Government publications sold by the Superintendent of Documents may be purchased from his office in sets of 20 for $1.

Para-Dichlorobenzene as an Insect Fumigant. 7 pages, 2 illustrations. (Professional Paper.) (Department Bulletin 167.) Price, 5 cents.

Gives directions for the use of Para-Dichlorobenzene both as an insecticide and as a fumigant.

The European Pine-Shoot Moth; A Serious Menace to Pine Timber in America. 11 pages, 6 illustrations. (Department Bulletin 170.) Price, 5 cents.

Gives the life history, habits, and methods of control of this insect, which is a menace to pine trees.

Food of the Robins and Bluebirds of the United States. 31 pages, 2 illustrations. (Professional Paper.) (Department Bulletin 171.) Price, 5 cents.

This bulletin discusses the value of robins and bluebirds as insect destroyers and shows how the small damage done by the former may be reduced by supplying wild fruits to meet their requirements. It is for general distribution.

How To Kill and Bleed Market Poultry. 12 pages, 6 illustrations. (Circular 61, Revised, Bureau of Chemistry.) Price, 5 cents.

The Organization of a Rural Community. 58 pages, 2 illustrations. (Separate 632, Yearbook 1914.) Price, 5 cents.

Farmers' Bulletins.

Some Common Birds Useful to the Farmer. 27 pages, 23 illustrations. (Farmers' Bulletin 630.)

The habitat, food habits, and economic relation to agriculture of more than 50 birds common to farming sections are discussed in this bulletin. It supersedes Farmers' Bulletin 54.

Tomato Growing in the South. 13 pages, 9 illustrations. (Farmers' Bulletin 642.)

Of especial interest to truck growers and members of canning clubs in the South.

Crimson Clover: Seed Production. 13 pages, 13 illustrations. (Farmers' Bulletin 646.)

This bulletin is adapted primarily to the crimson-clover section, viz, the eastern portion of the United States south of Pennsylvania.

CERTIFICATION OF SEED POTATOES IN DISTRICTS INFECTED WITH POWDERY SCAB DISCONTINUED.

The rapid spread of the powdery scab disease of the potato in Maine and New York and the difficulty which has developed in detecting, by any practicable inspection, the presence of slight infection by this disease has led the department, after an experience of five or six months, to discontinue further certification of seed stock from the infected districts under quarantine. It is believed that seed certification under the existing conditions, instead of being a benefit to the purchaser, may become a source of positive danger, for the reason that the purchaser is given thereby a false sense of security. Without such certification the purchaser, having been duly warned, will make his purchase for planting with a full understanding of the risk.

The only Federal certification of potatoes as a condition of movement from the infected districts is now as table stock potatoes, and a strong effort is being made to place table stock potatoes on a more reliable basis as to freedom from infection. As all potatoes grown in Maine, both in districts believed to be uninfected as well as in the known infected districts, are

under regulation as to interstate movement, Federal certification will be continued for seed potatoes grown outside of the infected regions of that State.

The modification makes no change in the status of the uninfected districts of New York, which have been free to ship seed potatoes without Federal inspection.

The public is warned that all seed potatoes hitherto shipped from the infected districts may contain powdery scab and that there must necessarily be some risk, accompanying their use, of the introduction of the powdery scab disease.

Undoubtedly there are farms, and in some instances fairly considerable areas within the infected districts in Maine and New York, which are still free from infection, but it is not possible to determine this fact without close scrutiny of every tuber, and such action is impracticable.

In relation to the southern market for Maine seed potato stock, it is fair to state that this disease has not established itself, and there is some evidence that it possibly could not establish itself, in the southern Atlantic Coast and the Gulf States. In these States the department experts are inclined to believe that the disease, if it appears at all, will be limited to the mountainous and colder regions.

DISTRIBUTION OF CULTURES FOR INOCULATING LEGUMINOUS SEEDS.

In distributing cultures for inoculating leguminous seeds, the department has determined to adhere to last year's practice and to limit the supply that will be sent to one planter to two bottles. Each bottle contains sufficient culture to inoculate thoroughly 1 bushel of seed. The limitation is made necessary by the probability that the funds available for the distribution of cultures will prove inadequate to furnish them in unlimited quantities.

Planters who have had no previous experience in the use of cultures and do not understand exactly what methods are necessary for successful seed inoculation should write to the department for information and for application cards. All requests for cultures must be transmitted upon these application cards. Preference will be given to advance requests, and farmers are urged to apply to the department for the culture at the earliest possible date and at least two weeks before the probable date of sowing the seed.

Planters are also requested to plant a small quantity of uninoculated seed on a portion of the same field with the inoculated seed. This, it is said, will materially aid the department in making observations and comparisons which will prove valuable to planters in the future.

ENCOURAGEMENT IN BREEDING FUR-BEARING ANIMALS.

Up to the present time experiments in breeding fur bearers have been carried on only with minks and martens. At the two stations, Prichard, Idaho, and the National Zoological Park, minks have bred, and the healthy condition of the young animals promises success. The stock of martens was secured too late for the animals to breed last season. This year it is intended to add raccoons, skunks, and possibly foxes to the list of animals to be included in these experiments.

During the spring an assistant visited New Brunswick, Prince Edward Island, and other portions of the eastern British Provinces and New England, for the purpose of studying the methods in vogue in the region for rearing foxes and other fur bearers. Data on improved methods of raising foxes will soon be published, to bring up to date preliminary information furnished in 1908 in Farmers' Bulletin 328, Silver Fox Farming.

Moleskins have been extensively used in this country during the last few years in making fur garments, and practically all of the supply has been imported from Europe. In the belief that the common mole of eastern United States produces fur of equal value, skins were submitted to professional furriers, who stated that the quality is superior to the foreign product. A report on the economic status of the eastern species was published during the year. The mole inhabiting the northwestern coast is larger than the common eastern species, and a number of these have been collected in order to obtain a report on the quality of the pelt. If the texture of the fur proves to be as good as that of the eastern animal, there is no reason why trappers should not secure a good income by capturing these animals, as the area they inhabit is extensive. In many localities an acre of ground supports as many as a hundred individuals. If this little animal can be profitably trapped for its fur, the problem of freeing agricultural areas from it will practically be solved.

Investigations into the economic value of North American skunks resulted in the publication of a Farmers' Bulletin on the subject. It has been found that this animal is one of the most useful of native mammals and a most efficient help to the farmer and the orchardist in their warfare against insect and rodent pests. As a source of fur it is also a commercial asset, the skins netting trappers about $3,000,000 annually. As the skunk is valuable in its activities as well as for its fur, experiments in breeding the animals in captivity are recommended. (Extract from Annual Report of the Bureau of Biological Survey, U. S. Department of Agriculture.)

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Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

VOL. II WASHINGTON, D. C., MARCH 24, 1915 No. 33

THE NEW COOPERATIVE LABOR PLAN.

In a recent address in Chicago, an official of the United States Department of Labor, in explaining the plan by which that department in cooperation with the Department of Agriculture and the Post Office Department hopes to minimize unemployment and at the same time relieve the labor situation in the rural districts, estimated that not 25 per cent of the men absolutely necessary in the wheat belt at harvest time could find employment there during the rest of the year. Moreover, it was difficult for the farmers to calculate far in advance the exact number of men that would be required to get in their crops. In consequence a great army had to be mobilized at very short notice, utilized for a brief time and then disbanded. This was the difficult problem which had to be solved before any plan could be truly effective.

At the present time a host of men passes annually from northern Mexico into Texas working its way, as the season advances, northward to the Dakotas. This army is, however, only a nucleus; it contains less than half of the men required for the harvest. It must, therefore, be recruited from the outside, a more difficult matter than might be imagined for not every man who is in search of work is fitted for the the harvest field. The question of transportation also complicates the situation. Harvest hands are not usually rich in ready cash and what they have they are not likely to risk in long journeys in search of opportunities that may not exist.

The first step, therefore, is to foresee where and when and how much labor will be wanted. In this the crop correspondents of the department can be of great service. They are in a better position than the average farmer to estimate the prospects in their several localities and the probable need for labor. The farmer himself, however, is being asked to do his part. Under the plan now in force, any employer in need of men can fill out a blank to be obtained at the nearest post office which is forwarded to the local headquarters of the Department of Labor. Among other things the prospective employer is asked to state on this card whether or not he will advance transportation and if so on what terms he expects to be repaid. Similar cards are provided for men in search of employers. In this way applications for men and applications for jobs are matched against each other.

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HOW THE FARMER CAN USE THE FACILITIES OF THE U. S. DEPARTMENT OF AGRICULTURE.

(*Continued from Vol. II, No. 23.*)

Farmers' Cooperative Demonstrations, Northern and Western States.

The Bureau of Plant Industry, through its Office of Farmers' Cooperative Demonstrations, Northern and Western States, in cooperation with the State agricultural colleges, is carrying on two lines of demonstration work: (1) With adults through county agricultural agents and farm management demonstrators; and (2) with young people by means of boys' and girls' clubs.

(1) DEMONSTRATION WORK WITH ADULTS.

Demonstration work with adults has been carried on in the Northern and Western States for the past three years by means of agents located in an agricultural area, usually the size of a county. There are now 313 of these agents located in as many counties in the Northern and Western States, and the number is growing as rapidly as funds are available and men competent for the work can be found.

The very diversified nature of the agriculture of the Northern and Western States necessitates that the agent who may be located within a county be thoroughly trained in agriculture. It is required that he be farm-bred, know the science of the subject as well as the field practice, and that he have organizing ability, tact, and common sense in dealing with men.

The county agent brings to the individual farmer the results of scientific investigations in agriculture and the experience of successful farmers and helps the farmer to put them into practice on his own farm. The agent's prime mission is to increase efficiency in farming and to secure to the farmer a greater net income at the end of the year, and at the same time maintain the productiveness of the soil, a proper standard of living, and a consequent improvement of rural life.

The idea uppermost in this demonstration work is to get as many farmers as possible to undertake some line of agricultural improvement on their own farms and thus learn better agriculture by actually doing it.

In taking up work in a county the county agent first finds out what the agriculture of the county really is and what the farmers need, based on an examination of

agricultural conditions throughout the county and conferences with the farmers themselves.

The agent's training in the science of agriculture along with his local studies enables him to advise with farmers helpfully at the outset on such subjects as spraying, seed selection and treatment, fertilizers, control of insect pests, cultural and stock practices, and other miscellaneous matters, and it is along these lines that he is usually first called upon for assistance in the county. But his greatest usefulness to the county comes from his cooperation with groups of farmers who study their own local agricultural problems and carry out lines of demonstration work that they devise of themselves or which the county agent suggests.

The county agent also acts as a connecting link between the scientific or research work of State and Nation and the farmer, not only presenting the results of investigations in such a way that they may be used by the farmer, but calling the attention of research institutions to the local agricultural problems of the county and soliciting the assistance of the scientists in helping to solve them.

Through a memorandum of understanding between the Secretary of Agriculture and the officials of the State agricultural colleges, all of the county agents of the department in the Northern and Western States are cooperatively employed with the State agricultural colleges. The agent, therefore, is a joint representative of the State and Nation and has back of him the support of these two great institutions in his advisory and demonstration work with the farmers. The county also in which the work is done shares in the expense and control of the work.

During the year 267 county agents have been at work. Of this number only 177 were at work at the beginning of the year. Two hundred and sixty-three have reported on the results of their work, as follows: Each agent reporting has visited an average of 290 farmers one or more times on their own farms; has been visited in his office by 331 farmers; has been consulted over the telephone on matters relating to agriculture 617 times and by letter 1,045 times. Added to this each agent on the average has held 75 general farmers' meetings, organized 7 associations for the promotion of agriculture along various lines, written 38 timely articles for the agricultural press, conducted 4 observation parties consisting of 70 men each to study local agricultural problems in different sections of the county, carried on demonstrations on the farms of 46 farmers, holding on the average 6 demonstration inspection meetings with an average attendance of 31 farmers at each meeting.

Each county agent on the average has secured the selection of seed corn in the fields of 69 farmers and has had planted selected seed on 2,132 acres, resulting in an increased yield as reported by 60 agents of 9.4 bushels per acre due to better seed used or to the better cultural methods suggested by the agent. On the average there were grown under the direction of the agent 1,010 acres of wheat in each county, with a reported increased average yield from 54 agents of 7 bushels per acre. Each agent induced on the average 26 farmers, growing a total of 729 acres of oats, to treat the seed for smut. The increased yield of oats reported from 48 counties doing demonstration work with oats was 10.6 bushels per acre.

With potatoes, 47 agents reported the growing of this crop by 2,447 farmers who treated the seed for scab or used improved cultural methods, getting in return an average increased yield per acre of 26.6 bushels. From 38 counties where results were reported in hay growing, the average increased yield on 140,519 acres was 1.1 tons per acre. Each agent secured on the average 58 farmers in each county, who grew an average of 5.5 acres of alfalfa each.

The 263 county agents reporting were instrumental in having the following number of registered stock secured by the farmers in the county: 53 stallions, 748 bulls, 171 rams, and 969 boars; 5,063 farmers were induced to feed live stock, and balanced rations were figured for and adopted on 4,698 farms. The agents assisted in the organization of 378 antihog-cholera clubs, which vaccinated 291,501 hogs. In addition, 4,717 silos were put up at the suggestion of the county agents and 110 breeders' associations organized. During the year 93 cow-testing associations were organized, and through encouraging individual farmers to test their herds 58,718 cows were brought under test.

Upon the suggestion of the county agents 7,224 farmers were induced to make better use of farm and barnyard manure, 1,988 farmers were taught how to home mix 10,341 tons of fertilizer, while 11,552 farmers were induced to use a total of 181,506 tons of lime. Commercial fertilizers were introduced on 4,938 farms, and 42,304 acres of hay, soy beans, cowpeas, and vetch were grown for green manure.

Aid in keeping farm accounts was given 2,417 farmers. The agents assisted in organizing 216 purchasing and marketing associations, which did a business of $1,236,023. In addition, they helped organize 72 farmers' exchanges, which did a business amounting to $93,806. These exchanges also served as a medium through which 2,533 farmers were supplied with labor and 276 farms were rented. The organization of 3,436 farms was analyzed with reference to labor income and factors of organization affecting the income by county agents and of 3,715 farms by special farm-management demonstrators.

(2) DEMONSTRATION WORK WITH FARM BOYS AND GIRLS.

In this work farm boys and girls between the ages of 10 and 12 are organized into small clubs with a leader and taught how to do certain farm and home operations according to the best-known practices. Club work in corn growing is one of the leading lines of work with boys. In this work each boy selects his seed corn, tests it, prepares the ground, plants, cultivates,

and harvests 1 acre of corn according to the most approved methods. He also usually makes an exhibit at the county and sometimes the State fair of his products. As a member of the Corn Club he meets with other boys for the purpose of study and instruction in corn growing, and as part of his school work writes the story of "How I grew my crop of corn."

The idea in this work is to show on actual demonstration plats how the average corn yields of the community can be increased and the cultural processes necessary to that end, and to bring boys at an early age into contact with the best phases of agriculture, so that they may have a better understanding of it and find enjoyment in it. Club work with boys is also carried on in potato growing, hay growing, fruit growing, the raising of poultry, pigs, etc., along similar lines. Frequently the girls take up this work with the boys.

The chief work with the girls, however, is the Canning Club work. In this work the girls are taught to utilize the wastes of the farm, like surplus fruits and vegetables, by means of canning and preserving. In the canning work the girls are instructed in the best commercial practices and taught to can in tin or in glass, using the various kinds of hot water and steam home canning outfits. In the Tomato Canning Club work, and with many other kinds of fruits and vegetables, the girls also grow the crops, market as much as possible of the fresh material, and can the remainder. As with the boys', the girls' club work is coordinated with the school work, and in addition, the girls are taught to prepare and serve the various articles canned in appetizing and attractive ways. With both boys and girls a careful record is kept by each showing the cost of growing the crop, the returns, and profit in all lines of the enterprise.

At the present time there are 147,546 enrolled in the club work in the 33 Northern and Western States. In the Corn Club work 29 boys report yields of over 120 bushels of dry shelled corn per acre, 106 report yields of over 100 bushels per acre, 461 over 80 bushels per acre, and 1,096 over 60 bushels per acre. In sugar-beet work, 546 boys report an average yield of 20.4 tons, with an average net profit of $37.60 per acre. Under irrigation methods the champion potato grower was produced by Utah, with a yield of 720 bushels per acre, while with humid conditions the highest yield, 560 bushels per acre, was attained by a Nebraska club boy.

In the club work with girls 493 demonstrations in canning, grading, and packing, and in the saving of by-products of garden, field, and orchard were made during the year, with an attendance of 119,427. In this work one Iowa club member grew 5 318 pounds of vegetables and made a net profit of $115.57 on her club plat. The club work with juniors, like the work with adults, is all carried on in cooperation with the State colleges of agriculture.

NATURE'S RELIABLE GUIDE FOR GARDEN PLANTING.

Nature furnishes guides for garden planting which are even more reliable than the calendar, according to the department's garden specialist. The old residents of the soil such as the maple, dogwood, and white oak are the best interpreters of nature's moods in spring, and quickly reflect them, so that the gardener who follows their silent suggestions may arrange the planting of his vegetables accordingly.

When the silver maples begin to put forth their leaves and the "catkins" appear on the willows and poplars, nature is indicating that the season is right for the planting of such vegetables as lettuce, mustard, onion seeds and onion sets, parsley, the round-seeded peas, early Irish potatoes, radishes, spinach, and turnips. This, of course, is provided that the soil is in good order, which can be determined by taking a handful at a depth of 3 or 4 inches from the surface, compact it in the hand by closing the fingers, and if, upon opening them, the ball of earth gradually falls apart, it is ready to be spaded. Manure should then be buried a full spade depth below the surface and the soil should be made fine and compact with an even surface.

Not until about 10 days after nature has set the date for the above-mentioned vegetables should such garden truck as beets, carrots, and kohl-rabi be planted. A second sowing of peas can also be made at this time.

The dogwood and the white oak begin to show signs of awakening at a time when other vegetables may be planted. These include bush and pole beans, sweet corn, cucumbers, muskmelons, watermelons, and various kinds of squash. The gardener and housewife will rarely plant too early if they but wait for nature to tell them what to do.

NOTABLE INCREASE OF PREPARATIONS FOR INSECTS ON MARKET.

There has been a notable increase in the number and quantity of insecticidal and fungicidal preparations on the market, according to the last annual report of the department's Insecticide and Fungicide Board. However, there also seems a more general desire on the part of the manufacturers to comply with the provisions of the law, and the department has made every endeavor to assist manufacturers in this respect by furnishing them scientific information. For this purpose the board has been issuing a monthly publication since last February in which are printed extracts from letters written to individuals by the board. These opinions, it is considered, should be of service to others and aid the public in a better understanding of the law's requirements.

A general outline of the procedure of the board is given in the report. Besides the administrative work necessary to enforce the act, there are examinations of the various preparations, and tests to determine their strength and efficacy. Materials and proprietary preparations used for agricultural spraying pur-

poses are examined, as are products used to rid the household, garden, etc., of insects of all kinds, disinfectants, germicides, etc., which are claimed to be efficacious to kill or combat bacteria, preparations used on horses, cattle, sheep, swine, or goats, as well as on fowls and other domesticated animals. Besides testing an insecticide or fungicide to determine its power to kill insects, tests are also made to determine whether the preparation will injure the vegetation on which it is sprayed.

One duty of the board is to keep imported adulterated and misbranded preparations from entering the country. Of 147 official and unofficial samples received during the year from abroad, it was recommended that 62 be denied entry until they should conform to the law.

FLOWERS THAT WILL "MAKE GOOD" IN YOUR GARDEN.

Many people at this season of the year are considering what flowering plants they shall put in their gardens. The average housewife, who has not much time to spare on the matter, the child who is just becoming interested in growing plants, and the teacher who is laying out a school garden for the benefit of her pupils will undoubtedly welcome some simple suggestions along this line. The department's specialist particularly recommends as satisfactory and easily grown flowers the ageratum, the nasturtium, the petunia, the California poppy, and the zinnia. Here are a few pointers on each of them:

Ageratum.—The ageratum is one of the few blue flowers we have. In its form it somewhat resembles the heliotrope, but has no odor. Ageratums grow well upon almost all soils and through a wide range of climate. For that reason many combinations with them are possible. The plants are neat, bushy, and erect, and produce a profusion of the brushlike flowers throughout the season. The dwarf blue sorts make fine borders and are much used where contrasting color effects are desired. For early bloom the seed should be sown in cold frames or in boxes in the house early in the season (March), but for summer and fall bloom the seeds may be sown in April or early in May in well-prepared beds in the open. Seeds sown in August will produce good plants for winter flowering.

Nasturtium.—The large seeds of the nasturtium require to be planted much deeper than the fine seeds of the petunia. Sow them in rows where the plants are to grow, placing the seeds about 6 inches apart in the row, and cover them about an inch deep. When all plants are up, thin so that they stand a foot apart if the soil is rich; if rather thin, it will be as well to allow them to stand at the planting distance. The plants should be given clean cultivation to induce rapid growth. If planted in the open at the same time that beans are planted very satisfactory results will follow. For earlier bloom, plant in advance of this date in hotbeds, cold frames, or window boxes.

Petunia.—While the petunia grows readily and rapidly from seeds sown in the open about corn-planting time, earlier bloom can be secured by sowing the seed in window boxes or hotbeds and transplanting the plants once before placing them in the open. For localities north of New York the most satisfactory method of handling these plants will be to start the seeds in window boxes about April 1, and to transfer the young plants to the open when the weather permits—about the middle of May. The seeds are very small and should not be covered with earth in the ordinary way. They should be sown on the surface and brought in contact with the earth by firming it with a board.

California poppy (eschscholtzia).—The eschscholtzia is an annual of striking character both as regards the form and color of its flowers, which are bright and rich in their tints of yellow and orange. The plants average about a foot in height, have attractive silvery foliage, and produce their large poppylike flowers quite lavishly from early spring until frost. The seeds of eschscholtzia may be sown in window boxes or in a hotbed in March, or in the open where the plants are to bloom as soon as the soil is in fit condition, in April or May in the latitude of New York. In latitudes south of New York the seeds may be sown in the autumn for early bloom. The plants enjoy a rich loam and should be allowed about 5 or 6 inches of space in the row. When used in beds they may be sown broadcast.

Zinnia.—The zinnia is easily grown from seed sown in the open ground. When sown in April the plants will bloom abundantly and continuously through the entire season. During the month of August zinnias are at their best. To secure large flowers and a profusion of bloom the plants must be given ample room for full development, as well as an abundant supply of food. Strong, rich soils suit the zinnia. If the seeds are sown in a dwelling house or in a hotbed in March and the young plants are pricked out once or twice before being placed in their permanent situations, more satisfactory results will be secured than from outdoor-sown seeds unless equal care in thinning or transplanting is given. In addition to their use in the school garden, zinnias can be used for groups, beds, borders, garden lines, and summer hedges. Their average height is 1½ feet. The zinnia is a rather large, formal flower whose colors range through the shades of red and yellow. Their season of bloom is through the late summer and autumn and the individual bloom lasts for a long time, both on the plant and as cut flowers.

The department has a bulletin on Lawn Soils and Lawns (No. 494) and a bulletin on Beautifying the Home Grounds (No. 185), which will be sent to applicants as long as the supply lasts.

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UNITED STATES DEPARTMENT OF AGRICULTURE

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MEXICAN FIBER INDISPENSABLE FOR THE COUNTRY'S HARVEST.

A serious calamity recently threatened the agricultural industry because of the disturbance in Yucatan and the announced blockage of the port of Progreso by Gen. Carranza. The harvesting of practically all grains with modern machinery was involved. If the port of Progreso had been closed it would have been impossible to secure the sisal fiber used in the manufacture of binder twine. It was urgent that this fiber be secured immediately and come forward in large quantities by the 1st of April, otherwise the factories could not have manufactured it in time in sufficient volume for the use of the farmers in harvesting this season's crop. It would have been necessary to harvest by hand, and to have harvested a large part of the grain in this way would have been impossible. The matter was so serious that the President and the Secretary of State, on representations from the Department of Agriculture and the Department of Commerce, took the matter promptly in hand. At the request of the President, Gen. Carranza abandoned the blockade of the port of Progreso.

In normal years about 200,000,000 pounds of binder twine are required for harvesting the grain, corn, and flax crops. From two-thirds to three-fourths of this is made from henequen (sisal) fiber, practically all of which is produced in Yucatan and exported from Progreso. This year the demand for twine is certain to be greater than ever. Last year's wheat crop was the largest the country has ever produced; this year's is expected to be still larger. Nine hundred million bushels is the estimate if normal conditions prevail from now to harvest. It is probable that the production of the other grains, especially of oats, will also be increased, and the other crops, the sorghums and corn, will be at least the equal of normal years.

The disturbances in Mexico have already caused an appreciable shortage in the stock of fiber now in this country. Between January 1 and February 28, 67,489 bales of 350 pounds each were brought in as compared with 156,659 bales in the same period last year and 111,654 in 1913. If further supplies had been permitted to be cut off the lack of twine would have resulted in the loss of a very large portion of the crops in the very year when they are most needed. In commenting upon the situation the Secretary of Agriculture said that the situation was vastly more serious than it was in 1912, when a threatened shortage of twine resulted in a sharp rise in price from 7 to 12 cents a pound. Then it was a matter of price; if Progreso were to be closed, this year it would be a matter of actual scarcity which would result in the waste of a great part of the crops.

PLOW FIELDS HEAVILY INFESTED BY HESSIAN FLY.

Before the warm days of spring arrive it would seem advisable for farmers in the wheat belt to plow under such fields as are heavily infested by the Hessian fly (where the plants are mostly dead) to a depth of not less than 7 inches. This measure will aid in protecting the late-sown and noninfested fields. The farmer will fare much better to destroy these heavily infested fields where owing to attack of fly the present stand is very thin, than he will to allow it to stand and permit the flies to emerge and injure fields not seriously infested.

Fields containing much volunteer wheat may also threaten uninfested fields in much the same way. Fields plowed under this spring should afterwards be thoroughly packed and planted to some crop other than barley or wheat, which will not require deep cultivation. Where chinch bugs were abundant, it will be dangerous to plant such infested fields to corn or kafir because the wheat springing up will attract the chinch bugs and these will lay their eggs on the wheat plants and from these last the young bugs will make their way to the young corn or kafir.

The Hessian fly has survived the winter and threatens heavy damage, according to recent investigation by scientists of the Bureau of Entomology, in Kansas, Oklahoma, Nebraska, and Missouri. In the fall of 1914 the department called attention to the fact that a serious outbreak of the fly was pending. The results of this outbreak of 1914 were very disastrous to thousands of acres throughout this wheat belt, causing farmers in many localities to plow under the wheat and resow, a thing heretofore unrecorded, and besides the fields that were plowed under there were still thousands of acres so badly damaged that the farmers resowed wheat as late as the middle of November. This late-sown wheat did not get a very good start last fall, and will be an easy prey to the pest this spring.

There were also many severely damaged fields that were allowed to stand, farmers depending on pasturing or climatic conditions to destroy the pest. So far as has been learned, however, pasturing and climatic conditions have had no generally decisive effect on the pest; so it seems advisable to recommend the plowing under of heavily infested fields where the wheat plants are at present thin on the ground. Farmers should remember that their wheat must withstand another attack of Hessian fly before harvest, wherever the fly was bad last fall.

THE ADULTERATION AND MISBRANDING OF THE SEEDS OF KENTUCKY BLUEGRASS AND ORCHARD GRASS.

During the calendar year 1914 seeds of Kentucky bluegrass and orchard grass were procured in the open market in accordance with the following paragraph in the act of Congress making appropriations for the Department of Agriculture:

> Where such samples [seeds of grasses, clover, or alfalfa secured in the open market] are found to be adulterated or misbranded, the results of the tests shall be published, together with the names of the persons by whom the seeds were offered for sale.

In carrying out the provisions of this act, 857 samples of the seeds mentioned above were secured and analyses made under the direction of Mr. E. Brown, Botanist in Charge of the Seed Laboratory, Bureau of Plant Industry, and publication is here made of the analyses of 61 samples found to be adulterated or misbranded, together with the names of the seedsmen by whom they were sold or offered for sale.

KENTUCKY BLUEGRASS.

Of the 453 samples obtained as Kentucky bluegrass seed, 19 were found to be either adulterated or misbranded. Of these, 13 contained less than 3 per cent of Kentucky bluegrass, 10 contained more than 75 per cent of Canada bluegrass, and 1 sample was rye grass.

TABLE I.—*Results of tests of samples of seed obtained in the open market as Kentucky bluegrass seed and found to be adulterated or misbranded.*

Seed offered for sale or sold as Kentucky bluegrass by—		Seed obtained by—	Seeds and inert matter found upon analysis of samples.			
Name of dealer.	Address.		Kentucky bluegrass seed.	Canada bluegrass seed.	Other seeds.	Dirt and chaff.
			P. ct.	*P. ct.*	*P. ct.*	*P. ct.*
Barstow & Co., J. P.	23 Water Street, Norwich, Conn.	Mail (sample)	10.72	65.34	2.27	21.67
Do	do	Purchase (bulk).	5.27	73.38	3.33	18.02
Forrest Seed Co.	Cortland, N. Y.	Mail (sample)	.52	85.65	1.33	12.50
Do	do	Purchase (bulk).	1.26	88.45	1.27	9.02
Hamilton Hardware Corporation.	90 Bank Street, Waterbury, Conn.	Mail (sample)	1.12	84.72	3.89	10.27
Do	do	Purchase (bulk).	.92	82.58	3.32	13.18
Helmer Milling Co.	14 Fourth Street, Fond du Lac, Wis.	Mail (sample)	.69	31.03	[1] 48.75	19.53
Do	do	Purchase (bulk).	16.93	12.77	[2] 60.94	9.36
Klass Commission Co.	Columbia, Mo.	Mail (sample)	9.55	68.10	3.03	19.32
Do	do	Purchase (bulk).	.80	60.52	[3] 20.96	17.72
Leifer Bros. Co.	Little Rock, Ark.	Purchase (bulk).	.....	.....	[4] 99.20	.80
Market Gardeners' Seed Co.	120 East Court Street, Cincinnati, Ohio.	Mail (sample)	.81	80.18	4.29	14.72
Do	do	Purchase (bulk).	2.31	77.42	4.42	15.85
Shultz Seed Co.	Olney, Ill.	Mail (sample)	63.21	.13	[5] 9.79	26.87
Do	do	Purchase (bulk).	50.73	.10	[6] 11.17	38.00
Springfield Hardware Co.	36 East Main Street, Springfield, Ohio.	Mail (sample)	.86	76.93	79.30	12.91
Do	do	Purchase (bulk).	.50	82.93	3.22	13.35
Wilber Co., H. R.	117 East Third Street, Jamestown, N. Y.	Mail (sample)	1.59	82.22	4.34	11.85
Do	do	Purchase (bulk).	1.32	80.89	2.21	15.58

[1] 23.52 per cent timothy; 18.47 per cent *Agrostis* sp.
[2] 26.23 per cent timothy; 17.28 per cent white clover; 9.27 per cent alsike clover; 4.50 per cent red clover.
[3] 19.85 per cent timothy.
[4] 97.11 per cent rye-grass.
[5] 8.64 per cent *Agrostis* sp.
[6] 9.81 per cent *Agrostis* sp.
[7] 7.18 per cent timothy.

ORCHARD GRASS.

Of the 404 samples obtained as orchard-grass seed, 42 were found to be either adulterated or misbranded. Of these, 19 samples contained more than 10 per cent of rye-grass or meadow fescue, 9 samples contained more than 5 per cent of chess or soft chess, and 4 samples contained more than 6 per cent of timothy.

TABLE II.—*Results of tests of samples of seed obtained in the open market as orchard-grass seed and found to be adulterated or misbranded.*

Seed offered for sale or sold as orchard grass by—		Seed obtained by—	Seeds and inert matter found upon analysis of sample.			
Name of dealer.	Address.		Orchard-grass seed.	Rye-grass and meadow-fescue seed.	Other seeds.	Dirt and chaff.
			P. ct.	*P. ct.*	*P. ct.*	*P. ct.*
Adams Seed Co.	Decorah, Iowa	Purchase (bulk).	.....	96.31	0.58	3.11
Bryant's Son, Herbert.	Alexandria, Va.	do	71.85	4.59	[1] 10.34	13.22
Carpenter Seed Co.	Provo, Utah	Mail (sample)	63.44	13.00	3.16	20.40
Do	do	Purchase (bulk).	50.84	9.94	1.67	37.55
Clarke-Keller	208 East Main Street, Shawnee, Okla.	Mail (sample)	65.78	9.99	.92	23.31
Do	do	Purchase (bulk).	33.17	48.04	2.52	16.27
Dickinson, O. H.	243 Worthington Street, Springfield, Mass.	Mail (sample)	71.47	3.59	[2] 7.72	17.22
Do	do	Purchase (bulk).	70.71	1.15	[3] 10.30	17.84
Doughten, H. W.	Moorestown, N. J.	Mail (sample)	69.28	13.28	[4] 7.10	10.34
Do	do	Purchase (bulk).	69.06	16.20	[5] 7.20	7.54
Drumm Seed & Floral Co.	Fort Worth, Tex.	do	13.72	64.23	6.96	15.09
Forbes Manufacturing Co.	300 Main Street, Hopkinsville, Ky.	Mail (sample)	59.01	.....	[6] 9.92	31.07
Do	do	Purchase (bulk).	58.31	.....	[7] 10.02	31.67
Godden Seed Co., Amzi.	Birmingham, Ala.	do	55.29	.....	[8] 8.34	36.37
Hardin, Hamilton & Lewman.	217 West Main Street, Louisville, Ky.	Mail (sample)	85.56	5.51	1.61	7.32
Do	do	Purchase (bulk).	79.02	5.18	1.43	14.37
Hastings & Co., H. G.	Atlanta, Ga.	Mail (sample)	83.08	6.58	.34	10.00
Do	do	Purchase (bulk).	82.52	5.50	1.13	10.85
Jacot & Mullen	12 Bridge Street, New York, N. Y.	Mail (sample)	66.20	17.79	[9] 7.46	8.55
Do	do	Purchase (bulk).	60.62	20.18	[10] 7.99	11.21
McMillan Bros. Seed Co.	Atlanta, Ga.	do	19.74	3.62	[11] 37.07	39.57
Market Gardeners' Seed Co.	120 East Court Street, Cincinnati, Ohio.	Mail (sample)	69.77	12.27	[12] 6.41	11.55
Do	do	Purchase (bulk).	75.92	7.04	5.52	11.52
Missouri Seed Co.	1426 St. Louis Avenue, Kansas City, Mo.	do	78.55	6.43	1.18	13.84
Olds & Whipple	164 State Street, Hartford, Conn.	Mail (sample)	.....	74.52	[13] 12.33	13.15
Do	do	Purchase (bulk).	.....	80.10	[14] 8.10	11.80
Patterson & Evans.	52 Vine Street, Cincinnati, Ohio.	Mail (sample)	78.74	7.88	[15] 5.06	8.32
Do	do	Purchase (bulk).	75.14	7.41	[16] 4.63	12.82
Petersen Commission Co., Jul.	709 Carroll Street, St. Louis, Mo.	Mail (sample)	79.84	5.95	[17] 4.49	9.72

[1] 4.88 per cent Kentucky blue grass; 3.46 per cent soft chess.
[2] 6.02 per cent chess and smooth chess.
[3] 8.27 per cent chess and smooth chess.
[4] 5.41 per cent soft chess.
[5] 5.53 per cent soft chess.
[6] 6.38 per cent timothy.
[7] 6.41 per cent timothy.
[8] 7.20 per cent tall meadow oat grass.
[9] 6.47 per cent soft chess.
[10] 6.92 per cent soft chess.
[11] 32.52 per cent *Festuca* sp.
[12] 5.69 per cent soft chess.
[13] 9.24 per cent smooth chess and soft chess.
[14] 6.44 per cent soft chess and chess.
[15] 2.58 per cent smooth chess and soft chess.
[16] 2.63 per cent soft chess.
[17] 3.38 per cent soft chess.

TABLE II.—*Results of tests of samples of seed obtained in the open market as orchard-grass seed and found to be adulterated or misbranded*—Continued.

Seed offered for sale or sold as orchard grass by—		Seed obtained by—	Seeds and inert matter found upon analysis of sample.			
Name of dealer.	Address.		Orchard-grass seed.	Rye-grass and meadow-fescue seed.	Other seeds.	Dirt and chaff.
			P. ct.	*P. ct.*	*P. ct.*	*P. ct.*
Petersen Commission Co., Jul.	703 Carroll Street, St. Louis, Mo.	Purchase (bulk).	77.83	4.54	[1] 5.65	11.98
Roanoke Seed & Supply Co.	10 Church Avenue, Roanoke, Va.	Mail (sample)	80.36	4.86	[2] 4.08	10.70
Do	do	Purchase (bulk).	75.15	6.37	[3] 6.52	11.96
Scarlett & Co., Wm. G.	729 East Pratt Street, Baltimore, Md.	Mail (sample)	80.20	5.02	[4] 5.37	9.41
Do	do	Purchase (bulk).	77.06	4.98	[5] 4.15	13.81
Schell, Walter S.	1307 Market Street, Harrisburg, Pa.	Mail (sample)	.....	94.82	3.50	1.68
Do	do	Purchase (bulk).	.....	94.22	3.57	2.21
Springfield Hardware Co.	36 East Main Street, Springfield, Ohio.	Mail (sample)	7.39	26.03	[6] 40.02	26.56
Do	do	Purchase (bulk).	9.99	28.15	[7] 34.74	27.12
Tait & Sons, Geo.	Norfolk, Va	do	79.62	5.74	3.49	11.15
Woodruff & Sons, S. D.	Orange, Conn	Mail (sample)	45.54	17.70	2.24	34.52
Do	do	Purchase (bulk).	45.20	16.86	2.65	35.29
Do	New York, N. Y.	do	44.95	21.11	2.05	31.89

[1] 4.06 per cent soft chess.
[2] 2.09 per cent soft chess.
[3] 4.46 per cent soft chess.
[4] 2.93 per cent smooth chess and soft chess.
[5] 2.51 per cent smooth chess and soft chess.
[6] 11.74 per cent timothy; 11.35 per cent Kentucky blue grass; 9.78 per cent *Agrostis* sp.; 3.52 per cent white clover.
[7] 10.73 per cent Kentucky blue grass; 2.21 per cent Canada blue grass; 9.15 per cent *Agrostis* sp.; 8.56 per cent timothy.

The Department of Agriculture will continue to examine and report promptly as to the presence of adulterants and dodder in any sample of seed submitted for that purpose. According to the location of the sender, these samples may be submitted to the Seed Laboratory at Washington, D. C., or to any of the following laboratories maintained through the cooperation of this department: Branch Seed-Testing Laboratory, Agricultural Experiment Station, Columbia, Mo.; Branch Seed-Testing Laboratory, Agricultural Experiment Station, Baton Rouge, La.; Branch Seed-Testing Laboratory, Oregon Agricultural College, Corvallis, Oreg.; Branch Seed-Testing Laboratory, Purdue University, La Fayette, Ind.; Branch Seed-Testing Laboratory, California Agricultural Experiment Station, Berkeley, Cal.

WM. A. TAYLOR,
Chief Bureau of Plant Industry.

Approved:

D. F. HOUSTON,
Secretary of Agriculture.

WASHINGTON, D. C., *February 27, 1915.*

A PLACE FOR SHEEP ON THE FARM.

The department urges the desirability of maintaining a small flock of sheep upon the farm. With proper care and attention a flock of 25 or 30 ewes can be kept at very little expense, and they will prove of inestimable value in freeing the farm from weeds and adding something to the farm income. In addition to providing a considerable supply of wholesome food for the farm table, there will be a surplus for sale, and an additional item of revenue in the form of wool.

Many farmers make a practice of buying ewes in the fall, breeding them and selling the lambs the following summer. Such ewes can be carried through the winter on wheat and rye fields if not pastured too closely, or on clover hay with some roots and a little linseed meal. If the clover hay is not available, corn fodder may be used as roughage, in which case it should always be supplemented with bran or linseed meal. Lambs should come early and should be taught to eat as soon as they are old enough. Give lambs access to corn by providing a creep through which they can go without allowing the ewes to follow.

For farm purposes the black-faced ewes are more popular than the others, although good results can frequently be obtained from the white faced ones. In buying ewes, be sure that they stand well on their feet, have good straight backs and good mouths. Ewes that have broken teeth or teeth that are badly worn down should not be bought. As a rule, a sheep has one pair of permanent incisor teeth when it is 1 year old, two pairs when it is 2 years old and three pairs, or a full mouth, when it is 3 years old. A full-mouthed ewe, if the teeth are in good condition, can be used for breeding with good results although she may be as much as 5 years old. Never buy a ewe that has a broken mouth—that is, with teeth that have been broken off or lost.

None but a pure-bred ram should be used. It is not necessary to have a show animal, but a strong, vigorous buck is essential. Shropshire, Oxford, Southdown, and Hampshire rams sire excellent mutton lambs, and these breeds are recommended for the farm States. A suitable ram can be bought for $8 to $20.

The two principal drawbacks to the sheep industry in the farm States are dogs and stomach worms. The dog nuisance can be obviated to a great extent by placing dog-proof fences around the pastures. The United States Forest Service has had excellent results in protecting sheep from coyotes and wolves by building fences constructed in the following manner: A barbed wire is first stapled to the posts right on the surface of the ground. Three inches above this is placed a panel of close-woven wire, 36 inches high, and above this two strands of ordinary barbed wire. Care should be taken to see that there are no openings between the ground and the lowest barbed wire. An inclosure made in this manner, into which sheep may be turned at night, is inexpensive, and dogs will not

get through it. Most of the damage by dogs is done at night.

The presence of stomach worms is a very serious drawback. The young lambs become infested with them by eating grass to which the worms have attached themselves, the eggs being deposited by the mature sheep. It is therefore desirable to keep the lambs on land on which the mature sheep have not run, and if possible, in cases of bad infestations, to keep the lambs away from the mature sheep as much as possible.

In the farm States the farmers will find it to their best advantage to regard the wool from the sheep as a by-product, and direct their principal attention to the production of lambs and mutton for the table.

TO PREVENT LOSS FROM SOIL EROSION.

Loss from soil erosion in the South has been found to be a most important factor in that section's agriculture, by investigators of the department. The loss, in fact, is said to be greater in that than in any other section of the country, and wherever hilly land is used for crops, investigators urge that measures for preventing further damage be adopted. The results of the investigation have just been published by the department as Bulletin No. 180, "Soil Erosion in the South." This bulletin also contains a study of the problem of erosion in general, which will be of interest to all farmers in hilly or rolling country.

Terracing is recommended as the best and most efficacious method of controlling erosion. It should be supplemented, however, by deep plowing and the addition of organic matter to the soil whenever these measures are possible. Water running rapidly over the surface will carry with it particles of the soil and the faster it runs the more soil will it carry. In the course of a year the amount of earth that is thus removed reaches colossal proportions. Geologists have estimated that the rivers of the United States annually carry to the sea soil material to the amount of 783,000,000 tons. In localities where this erosion is carried on to an advanced stage the quality of the soil is greatly impaired, a large part of the soluble salts are removed, the surface soils are often washed down to the lowlands, gullying so defaces the land that it becomes difficult to cultivate, and the loss in organic matter frequently causes the field to be abandoned as too poor for profitable agriculture. In the South, it is said, erosion is the chief cause of the abandonment of land and in some sections has caused 50 per cent of the arable land to lie idle.

All methods of preventing soil erosion are directed toward lessening the amount of water that runs off the surface and increasing the amount that sinks into the soil. If all the water that falls on a given area were absorbed by the soil there could be no erosion. For this reason vegetation is useful because it checks the flow of the water and thus affords more time for the process of absorption. Hence the movement for the more general use of cover crops in the South. In addition to retarding the flow of the water, such crops keep the soil more or less open by the penetration of their roots and in this way further facilitate absorption. Deep plowing produces somewhat the same effect, but does not, of course, add any organic matter to the soil which promotes the granulation of the soil particles, and thus produces larger spaces between the particles for the water to sink through.

Terracing, the use of cover crops, and deep plowing will unquestionably greatly diminish the loss from erosion. It is also unquestionable, according to the investigators, that it will pay to do this. On moderate slopes in the Piedmont region of North Carolina the decrease in crop values alone due to erosion has been estimated at $3 an acre yearly, making a total annual loss of over $2,000,000. The fact that there are many hilly farms where erosion has been stopped indicates both that this loss is in a measure unnecessary, and that in certain areas it must amount at present to far more than the $3 an acre already mentioned as an average.

TO PLANTERS OF EARLY POTATOES.

Truck growers who annually plant a considerable acreage of potatoes are warned by the department that there was, on January 1, 1915, a very much larger supply of northern-grown potatoes in the hands of growers and dealers than was the case January 1, 1914. Experience has demonstrated that a large hold-over crop of northern-grown potatoes which is in good condition and selling at a reasonable price when the early truck-crop potatoes reach the market means low prices—sometimes so low that the shipment of such crops nets a loss to the grower. Under such conditions a small acreage means a smaller loss than a large acreage.

With 43,000,000 more bushels of potatoes in sight January 1, 1915, than were available at the same time last year and with a 1915 price of 43.2 cents as compared with 66.2 cents a year ago, a price which under the then existing conditions did not improve before the truck crop began to move, there is little hope that the conditions will be better this year. The price now is just about 33 per cent less than it was a year ago. The distribution of the crop is much better than last season; so there is little likelihood that the price of hold-over stock will reach last year's mark even by the end of the storage period.

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Weekly News Letter to Crop Correspondents

UNITED STATES DEPARTMENT OF AGRICULTURE

ISSUED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

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U. S. Department of Agriculture

THE "CURLEW BUG" DRIVEN OUT BY CROP ROTATION.

Rotation or alternation of crops is a simple and efficient method of getting rid of the "curlew bug," a wide-spread pest in corn and rice fields. "Don't plant corn after corn or rice, or rice after corn" is a useful maxim to remember in localities infested by the bug.

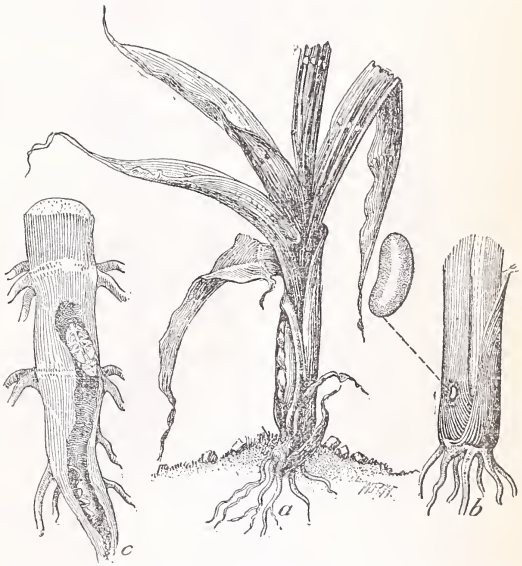
The curlew bug, which is one of the so-called "snout beetles" or curculios, about half an inch long, is particularly fond of swamps and marshes, where it feeds on large-stemmed grasses and sedges. Of cultivated crops, corn and rice most closely resemble its natural food, and in consequence the bug is a menace to these crops in almost every state in the South and in large sections of the Middle West and Southwest as well. It can not live on the small grains or on such plants as cotton or cowpeas. In consequence, if infested fields are planted to oats, rye, barley, cotton, or cowpeas the curlew bug disappears at once.

In practice, cotton, cowpeas, or winter oats will probably be the best crops to use for this purpose in the South. In Ohio, Indiana, Illinois, Missouri, southern Wisconsin, and Arkansas oats, rye, and cowpeas are good, and in the Southwest—in Arizona and New Mexico—oats, rye, barley, or cowpeas. After a year of one of these crops the field can be planted again to corn. If the pest returns, a similar alternation should be resorted to once more.

The curlew bug will remain in an infested cornfield throughout the winter and if the field is planted to corn again come out in the spring to feed upon the young corn plants. By means of its long snout, at the end of which are situated the mouth and jaws, the beetle punctures the stem of the plant, and thus either secures its food or deposits its eggs. Usually the puncture is made a little below the surface of the ground and extends into the crown of the plant. If the puncture is made just above the root, the plant will throw up a number of "tillers" and "suckers," while the main stem itself will be without ears and stalky in appearance. In this respect the work of the curlew bug produces somewhat the same effect as that of the Hessian fly on a young wheat plant in the fall. If the puncture is made higher up on the stem, food is obtained from the folded leaves above the crown. When these leaves finally push forth, the effect of the puncture made by the beetle's snout is revealed by rows of holes across the leaves. Frequently there will also be a distorted growth on the stem.

While the damage done by the beetles in feeding or laying their eggs is in many cases doubtless severe—if the corn plants are very young at the time of attack they are probably destroyed in this way—generally speaking the greatest damage is caused by the larvæ hatching from the eggs, especially in the East. The grubs of the insect apparently can live without difficulty for a considerable length of time in the stems of plants that are completely covered by water.

With these insects in full possession of a field, there does not appear to be any thoroughly practical and effective measure for preventing or overcoming their



The "curlew bug": *a*, Corn plant attacked by adult insect; *b*, egg as placed in stem of young corn plant, enlarged at left; *c*, pupa and adult in root of corn in chamber eaten out by the larva, slightly reduced. (Original.)

ravages, which frequently result in a total loss of the crop. While throwing up the soil or hilling up the young plants with the cultivator might prevent the beetles themselves from puncturing the stems low enough down to cause the plants to sucker or become distorted, this is by no means assured. We only know that the higher up the insect punctures the stem the more likely is the attack to result only in the transverse rows of holes across the leaves. In any case this ridging or hilling up would only form a slight protection against the injurious effects of the feeding of the beetles. Once the larvæ have started to burrow their way downward in the stem there is no way whereby they can be reached by any measure likely to seriously affect them.

THE SHAHON PEA.

Over a year ago the department called attention to some very extravagant advertisements concerning the so-called Shahon pea. It was pointed out that the Shahon pea is nothing but one of the many varieties of yard long or asparagus beans. These have long been used to some extent as snap beans, as the young pods have an agreeable asparaguslike flavor. As a forage crop none of the asparagus beans can compare with the better cowpeas either in production of pods or of herbage, a conclusion reached by the Office of Forage Crop Investigations after five years' testing of about 20 varieties of asparagus bean.

During the past season the Shahon pea has been specially compared with 12 other varieties of asparagus bean, all having buff or pink-buff seeds. This test showed clearly that the Shahon pea has no superiority over most other varieties. Indeed, it seems indistinguishable from the commonest variety grown in France and sold by French seedsmen.

Inasmuch as the extravagant advertisements of the Shahon pea are being repeated this season, it seems desirable to warn farmers that unwarranted claims are being made for this pea and that it is being advertised for sale at exorbitant prices.

All of the asparagus beans have slender viny stems, which together with the pods lie on the ground unless supported. It is therefore practically impossible to harvest them with a mower. Furthermore, they will not yield as much herbage or as many pods as the better varieties of cowpeas.

As a table vegetable there is a place for the asparagus bean. It requires the same method of culture as ordinary pole beans and cooked as a snap bean is a desirable table vegetable. Asparagus beans can scarcely be relied upon to mature north of the Potomac and the Ohio Rivers, as they require a long, hot season.

Some advertisers ask the extravagant price of $4 a pound for seed of the Shahon pea and make the absurd claim that 2 pounds of seed will plant 1 acre which may be expected to yield 15 bushels of seed and 14 to 20 tons of hay. These supposed yields are based on the product of a single vine, a method that gives utterly untrustworthy results.

The usual wholesale price of asparagus bean seed in France has been 25 to 30 cents a pound, depending on variety. The seed is, however, but rarely handled by American seedsmen.

253,288 SQUARE MILES FREED FROM TICKS.

Through a typographical error in the Weekly News Letter of March 17, the area freed from ticks since the beginning of the work in 1906 was stated as 25,782 square miles. The actual area at the present time is 253,288 square miles, of which over 28,000 were released from quarantine on March 1.

GRAFTING AND BUDDING THE WALNUT.

Though the practice of budding and grafting the walnut is quite new to American horticulture, some of the common methods used in the propagation of deciduous fruit trees, slightly modified, are giving fair to good results with this tree. In some instances as high as 90 per cent of the buds set have been reported as successful, while several individuals have reported from 60 to 75 per cent of grafts as succeeding. However, the beginner may feel gratified the first season with from 5 to 20 per cent of successful unions. With due care in selecting scions and stocks, time of operating, and strict attention to the details of the work there is reason to believe that a good workman after a little practice should make a considerable percentage of buds or scions unite successfully.

It is well known to experienced fruit and nut growers that the best varieties may be propagated "true to name" only by budding or grafting. Seedling walnuts are frequently relatively little better than seedling apples, and ought not to be considered in plantings for commercial purposes. For the purpose of budding or grafting with the walnut it is desirable to use such stock as gives best known results in the region where the work is to be performed. For the Eastern, Middle, Northeastern, and Southeastern States the native eastern black walnut is preferred for the reason that we know it thrives in this territory. For the Southwestern States stock of the Texas or Arizona native walnut is to be selected, while for the Pacific coast, especially California, stock of the native California black walnut or stock of the Royal hybrid walnut should be used. For the northern part of the region, notably Oregon and Washington, stocks of both the eastern black and California black walnut appear to give favorable results. Which of these stocks will ultimately prove the more desirable for this section is yet to be determined by experimentation.

Grafting may be employed in nursery propagation or in the reforming by "top grafting" of undesirable heads of established trees. The most desirable size wood for grafting stock is from 1 to 3 inches in diameter; a mean of 2 inches is about ideal. Wood for scions should be as near three-eighths of an inch in diameter as it is possible to get it, though material somewhat smaller or larger may be used in the case of smaller or larger stock wood, or according to the methods used. If it is necessary to use branches up to or above 3 inches in diameter, scion wood half-inch in diameter may be used successfully, while for slip bark, split bark, or side grafting scion wood one-fourth inch in diameter is serviceable providing it is not too soft.

Scion wood ought to be removed from the parent tree from two weeks to a month before the sap begins to flow. Immediately after being taken from the tree the scions should be tied in small bundles 2½ or 3 inches in diameter, wrapped in moist fiber or moss, or

covered with clean moist sand and kept in a cool or cold place. If the scions are taken early, which will require them to be held in cold storage for a considerable period, the cut ends should be dipped in warm wax, thus sealing the pores before the scions are tied in bundles. A refrigerator at 40° to 50° is a good place for storing, providing the scions are not allowed to get too dry. Scions that are not well covered with moist material and closely wrapped with impervious material, as waxed paper, will dry out to an injurious extent if subjected to continued cold storage. When the leaves of the stock begin to unfold it is time to begin grafting, and the work may be kept up as long as the scion wood remains fresh and plump and the bark of the stock slips freely. Generally best results follow the use of well-selected scions that are carefully made and put quickly into place on the stock, snugly tied or wrapped, and the wounds then thoroughly waxed or covered with some equally good material that is impervious to air and water. One of the most important points in the operation is to prevent the scion from drying out. Besides waxing, the grafts are covered with paper bags, which remain tied on to the stock for two or three weeks, or until such time as the scion buds have unfolded and started to grow. Even then the bags may be left around the grafts still longer with advantage (as they protect the young shoots from injury by drying winds), providing the top of the bag is removed, so that the young shoots may have access to the sunlight.

An excellent wax for the covering of grafting wounds is made as follows: Resin, 5 pounds; beeswax, 1 pound; finely pulverized charcoal, ½ pound; raw linseed oil, 1 gill. Melt the resin and beeswax over a slow fire, then stir in the charcoal, add the oil, and pour into pans that have been previously oiled with linseed oil, so that the wax will not stick. Use warm, with a soft brush.

The propagation of walnut trees by budding is of rather recent application in a commercial way, though it has been used and advocated by some active experimenters for years. Several careful operators practice budding in preference to grafting for commercial propagation. The chief difficulty at present is in obtaining buds properly developed, though in those sections where there are considerable plantings this difficulty is minimized for the reason that the loss of a relatively large amount of wood is not particularly noticeable. As with scion wood, the bud wood must be dormant, at least so far as the buds to be used are concerned. Usually at the season for budding there are not many of the current year's buds developed enough for use, but one may find some matured ones just below and at the base of the current year's growth. The maturity of the lowest buds of the current year's growth may be advanced by cutting off the attendant leaves at a point somewhat over an inch above the base of the leafstalk about two weeks before needed for budding.

The following figures are illustrative of the major operations in budding and grafting by the more commonly employed methods:

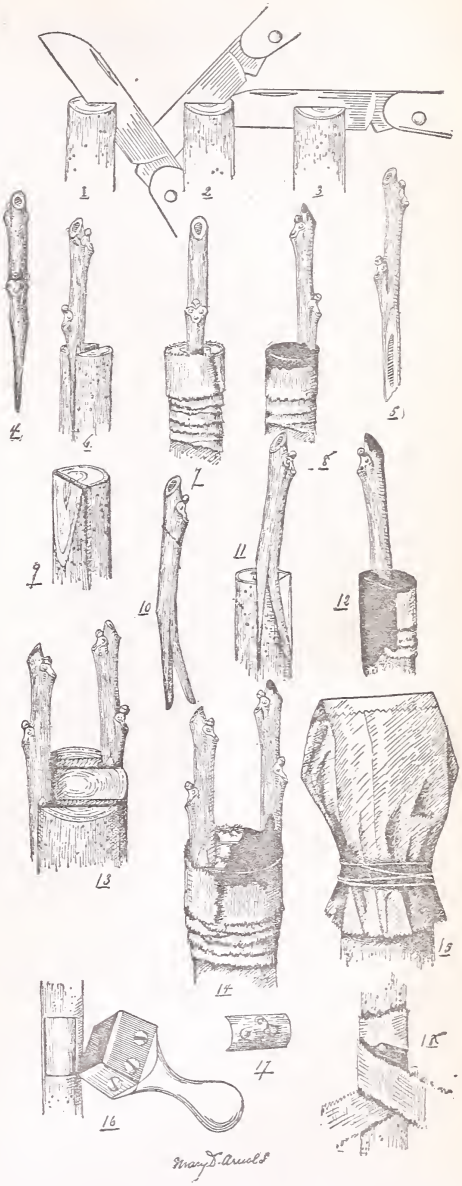


Fig. 1, first position of knife in making standard cleft in stock; 2, second position; 3, third position. Figs. 4 and 5, scion prepared for insertion into cleft. If found necessary a small hard-wood wedge may be used to hold the cleft open while scion is being put in place. Figs. 6, 7, and 8, scion in position, wrapped, waxed. Fig. 9, a modified cleft used by some Pacific coast operators when operating upon small stocks. Fig. 10, scion prepared for use on modified cleft graft. Fig. 11, scion in position on modified cleft graft. Fig. 12, wrapped and waxed—a finished graft of this type. Figs. 13, 14, 15, scions in position, wrapped, waxed (in part for purpose of illustration), and "bagged." Figs. 16, 17, 18, the Jones budding tool, showing patch removed from stock; as the bud comes off the bud stick removed by same tool; bud in place and partly wrapped with waxed cloth.

The waxed cloth for wrapping in the above operation is made by using narrow strips of medium-weight cloth one-half to three-fourths inch wide and dipped

for a few minutes in a melted mixture of the following material, in these proportions: Six parts resin, one part beeswax, one part linseed oil.

HOW THE FARMER CAN USE THE FACILITIES OF THE U. S. DEPARTMENT OF AGRICULTURE.

(Continued from Vol. II, No. 33.)

Bureau of Entomology Aids Man Against Powerful Foes From the Insect Kingdom.

When the farmer wishes advice regarding practical methods of dealing with insect pests, he may obtain the same without any expense other than a postal card. This should be addressed to the Bureau of Entomology, United States Department of Agriculture, Washington, D. C. More than 150 skilled investigators of insects are employed in this branch of the department actively engaged in studying the habits of harmful pests, examining and trying out possible remedies, and in passing on this information to the individuals most in need of it.

Not only does the Bureau of Entomology give information regarding the extermination of well-known insect foes, but it can usually identify pests unknown to the sender and recommend a remedy. In this case specimens must be sent by the person desiring the information. The best way to send most insects is in a living condition with a supply of food in a strong wooden box, although they may be sent in alcohol in a mailing tube. By preference the experiment station or agricultural college nearest the farmer's locality should be applied to first, as more particular and intimate knowledge may be obtained regarding the present activities of the undesirable insect. The bureau at Washington, however, also answers such inquiries, its particular sphere being to deal with such pests as are doing injury over larger areas than represented by a single State.

Harmful insects are not the only ones about which information may be had by writing to the department's Bureau of Entomology or the various experiment stations in the States. If some strange-looking creature arouses the farmer's curiosity, he may write to headquarters and learn as much as is known about it. No return postage need be inclosed.

A general idea of the scope of the department's bureau may be gained from this list of its offices dealing with insects attacking special crops:

Apple-Insect Investigations.—Many preparations are being tested as remedies for such insects as the codling moth which attacks apple trees. How effective control of apple plant lice may be obtained by the timely use of nicotine sprays will be explained to any applicant for this information.

Peach-Insect Investigations.—The peach borer is being thoroughly studied and many washes and practices that were once thought valuable for its control have been discovered to be worthless. A successful treatment has already been developed for pear thrips, the details of which may be had by anyone interested.

Grape-Insect Investigations.—Experiments in renovating old vineyards infested with certain crop pests have resulted in much benefit to the owners.

Nut-Insect Investigations.—Many pecan-growing regions in the South are profiting from the application of sprays applied with high-power sprayers, as recommended by the bureau.

Orchard Insecticides and Spraying Machinery.—The relative merits of most types of commercial insecticides have been determined and new preparations as they are put on the market are tested as soon as practicable. Spraying apparatus is subjected to similar scrutiny, it being the desire of the office to determine the most economical type for each particular problem.

Cranberry-Insect Investigations.—The method of flooding bogs now in vogue is being investigated to determine its value and to improve the method if possible. Additional remedies are being worked out as well.

Orchard-Insect Survey.—Information is being gathered on a large number of orchard insect pests at present of minor importance in the United States and should these pests at any time become dangerous the information will be immediately available.

Cereal-Insect Investigations.—Such dangerous creatures as the Hessian fly, the corn-leaf aphis, cutworms, rootworms, wireworms, army worms, and the white grub are having their fields of action greatly limited by the activities of this office.

Forage-Insect Investigations.—Pests infesting alfalfa, clover, soy beans, cowpeas, etc., are of interest to this office.

Other offices deal with insects that injure cotton, tobacco, rice, and sugar cane. Still others look into remedies for pests that damage forests or forest products. The Mediterranean fruit fly has offered such a dangerous menace to the United States because of the fruit yearly imported from Mediterranean countries that one office devotes its energies to controlling this undesirable importation and to take any quarantine action that may be necessary. The great number of tropical and subtropical fruits growing in our Southern States has made it necessary for another office to deal with their particular enemies. Thus, in Florida the "white fly" is being combated, while in California methods of gasing citrus groves to drive out "scale" insects are being developed, and in Arizona and Texas date-palm pests are studied. The work in each case is done in cooperation with the interested States.

There also are specialists detailed to help the grower of such truck crops as potatoes, onions, spinach, tomatoes, melons, cucumbers, beans, peas, and lettuce. Sugar-beet pests receive special attention. Even the busy pests that seek out agricultural products after they are stored are fought by other specialists, who make up a special office devoted to this purpose. New methods of sterilizing such products are being devised as well as for making insect-proof cartons and containers for cereals and dried fruits.

Finally, there are three very important branches of the department's Bureau of Entomology:

(1) Bee-culture investigations.

(2) Investigations of insects affecting the health of man and of animals.

(3) Investigations of the devastating gipsy moth.

The first of these endeavors to improve and encourage the production of honey and wax as commercial products; the second bends its energies toward the eradication of the spotted fever tick in Montana, the malarial mosquito in Louisiana and elsewhere, the universal typhoid fly (better known by the euphoneous title of house fly), as well as the tick, stable fly, and other creatures which reduce the efficiency of live stock; the third endeavors to prevent the spread of the New England moth pest by quarantine, inspection, and treatment of infested areas.

This is a mere skeleton of the department's activities in fighting insect foes of the farmer's family, live stock, farm, and orchard.

If you have an individual problem which falls under the branches outlined, you may call on this organized army of specialists known as the "Bureau of Entomology."

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